GETTING DOWN TO FACTS II

Technical Report

Towards a Common Vision of Continuous Improvement for California

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About: The *Getting Down to Facts* project seeks to create a common evidence base for understanding the current state of California school systems and lay the foundation for substantive conversations about what education policies should be sustained and what might be improved to ensure increased opportunity and success for all students in California in the decades ahead. *Getting Down to Facts II* follows approximately a decade after the first *Getting Down to Facts* effort in 2007. This technical report is one of 36 in the set of *Getting Down to Facts II* studies that cover four main areas related to state education policy: student success, governance, personnel, and funding.

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Calls for continuous improvement have become central to recent conversations about education reform. A number of notable writers and researchers have advocated for continuous improvement (O'Day & Smith, 2016; Loeb & Plank, 2008; Darling-Hammond & Plank, 2015; Bryk, Gomez, Grunow, & LeMahieu, 2015; Fullan & Quinn, 2016; Senge, 2006). Federal policymakers included continuous improvement language in the 2015 reauthorization of their signature education policy—the Every Student Succeeds Act (ESSA). In addition, prominent education organizations including the Gates Foundation and the Carnegie Foundation for the Advancement of Teaching have doubled down on continuous improvement as the way to propel advancements in educational performance.

Several state Departments of Education are also investing in continuous improvement as a strategy to enhance educational equity and performance (e.g., Tennessee Department of Education, Missouri Department of Education). The California Department of Education used the term continuous improvement 23 times in the January 2018 version of the state ESSA plan.[1] Coined the "California Way," the state has enacted a series of policies and investments designed to support continuous improvement across the state. These include a publicly accessible statewide data Dashboard, investments in county offices of education as support providers for local education agencies, and revisions to the state funding formula to provide school districts with more flexibility in how they invest resources to meet locally defined goals.

Indeed, there is good reason to be optimistic about continuous improvement as a reform strategy. As we describe in this paper, continuous improvement has been successful in improving outcomes in other sectors. It has been used to dramatically enhance overall performance in international organizations such as Toyota (Liker, 2004; Womack et al., 2007; Rother, 2009; Spears, 2010), decrease child mortality across Ghana,[2] and eliminate disparities in asthma care in children from high- and low-income families (Kenney, 2008). It has also been successfully used in education to increase student participation in the Advanced Placement exams (MCPS, 2010), increase high school graduation rates (Haxton & O'Day, 2015; Aguilar, Nayfack, & Bush-Mecenas, 2017), and decrease chronic absenteeism[3] and suspension rates (SDMF, 2017).

However, for the education sector to reap similar benefits as these other industries, continuous improvement must be well understood as a reform strategy. Otherwise, education reformers run the risk of applying continuous improvement principles at merely a surface level, without the deep transformation of culture and ways of doing business necessary to enact continuous improvement practices at the individual and systems levels. A history of education reform efforts teaches us that promising approaches can quickly be reduced to new names for

[1] https://www.cde.ca.gov/re/es/

[2] http://www.ihi.org/Engage/Initiatives/ghana/Pages/default.aspx

[3] https://www.carnegiefoundation.org/get-involved/spotlight-on-quality-in-continuous-improvement/high-tech-high/

old ways of working or a superficial application of ideas that do not fundamentally change how schools and districts operate (DiMaggio & Powell, 1991; Meyer, Scott, & Deal, 1992).

To prevent continuous improvement from becoming merely a convenient slogan, the field needs a common definition of what it is, clarity on what it means to engage in continuous improvement, and a description of the specific mechanisms that lead to improved outcomes. Fortunately, we can draw on the rich history of continuous improvement in other fields to identify and integrate specific practices and knowledge into the unique context of schools and school districts.

To this end, in this paper we review the history, theory, and successful application of continuous improvement in other fields and use them as a backdrop to make sense of what is currently happening in California with regard to continuous improvement. To do this, we undertake two lines of investigation. In Part 1, we review the continuous improvement literature from education and from other sectors. We present here a summary of the genesis and uptake of continuous improvement in other sectors, provide examples of successful continuous improvement efforts in education, and offer an initial set of typologies and definitions of continuous improvement. We pay particular attention to continuous improvement organizations, highlighting the key shifts in governance required to transform into such an entity. We intend for this review to highlight the long history behind the principles and application of continuous improvement and to paint a picture of what a continuous improvement approach in education might look like.

In the second line of investigation, Part 2, we report on our findings from 41 interviews—with leaders from state education agencies, county offices of education (COEs), school districts, technical assistance providers, education advocacy organizations, and education associations—to understand California's statewide effort to support the emergence of continuous improvement. Finally, we provide a summary of our findings and discuss the extent to which school districts are engaged in continuous improvement efforts, how they define continuous improvement, and the barriers to and gaps in support for this work.

In order to inform the productive uptake of the key ideas of continuous improvement, we close with a summary of notable contrasts between the idealized state and the current state of continuous improvement in California, highlighting the differences in understanding, investments, and resources that contribute to this gap.

Part 1. Continuous Improvement:[4] In Theory and Practice

Striving for ongoing improvement is not a new idea in education, but advocating for continuous improvement as the mechanism to get there represents a shift from previous accountability policies. For most educators, the words are familiar and signal a common intention, but for only an isolated handful of forerunners is the use of a rigorous application of continuous improvement an integral part of how they do business. In this paper, we define continuous improvement as the ongoing disciplined efforts of everyone in the system to make evidence-based changes that will lead to better outcomes, system performance, and organizational learning.[5] Underlying this approach is a set of assumptions that distinguishes it from other approaches to improvement. First, a continuous improvement approach assumes that outcomes are primarily the result of the design of the system as opposed to individual will, motivation, or performance. Second, given the first assumption, improvement efforts target the work processes and activities that produce these outcomes. Third, improvement requires the engagement of everyone in the system, especially those on the frontline responsible for getting core processes to work in their local contexts. Finally, learning is codified into standard work practices for the organization, and these work practices are continually updated through local experimentation.

Education is not the first sector to demonstrate widespread interest in continuous improvement as a way of boosting organizational performance, particularly as a response to dissatisfaction with policies and strategies that promote compliance and accountability as the primary approach to improvement. The ideas of continuous improvement were first applied to and spread through the manufacturing industry in the latter half of the past century, significantly changing how leaders managed their organizations to achieve better outcomes. Impressed by the results from manufacturing, the field of healthcare began its quality improvement journey in the early 1990s, resulting in better and more equitable care in a number of healthcare organizations across the country (see Kenney, 2008). Today, continuous improvement is used in healthcare, government, technology, and the service industry.

Given its pervasiveness in other fields, we start with a brief history of the genesis and uptake of continuous improvement in other industries as well as examples of outcomes achieved through its application. While we recognize that continuous improvement in education will look somewhat different given the unique nature and context of schooling, there are many important insights and lessons to be learned from the spread of continuous

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[4] Proponents of continuous improvement use a variety of terms to describe the approach. These include improvement science (Carnegie Foundation for the Advancement of Teaching), quality improvement (The Institute of Healthcare Improvement), democratic experimentalism (Liebman & Cruikshank, 2017) and learning organizations (Senge, 2006). While these different terms are chosen strategically and in some cases represent distinctions, it is our take that these proponents in large part are arguing for the same approach to educational improvement. Therefore, for pragmatic reasons we will use the blanket term "continuous improvement" and highlight key distinctions where necessary.

[5] Definition adapted from Batalden & Davidoff (2007).

improvement principles in other fields. We also offer a more detailed definition of continuous improvement, highlighting how it differs from other school reform efforts. We end with a description of the different ways in which continuous improvement is currently used in education and a vision for what it might look like when fully embedded in the daily operations of schools and districts.

The Emergence of a Powerful Set of Ideas

The roots of continuous improvement are commonly traced to the mid-1900s and the work of W. Edwards Deming. Arguably considered the grandfather of continuous improvement, Deming was a statistician, professor at New York University, and management consultant whose ideas helped revive the postwar Japan economy in the 1950s. Deming helped manufacturing leaders across Japan use continuous improvement to dramatically improve product quality while simultaneously reducing costs, transforming Japan into a global powerhouse and economic model for the rest of the world.

For Deming, an organization's use of continuous improvement is at its core a management approach. Deming was openly critical of the dominant management practices of the day that focused on short-term outcomes, relied largely on end-of-the-line inspection to improve quality, and blamed workers for problems with production. Instead, he believed that (a) most problems were not the result of bad workers but rather the design of the system[6] in which these workers did their jobs, and subsequently (b) quality could be improved by making changes to the system itself. Deming also believed that achieving quality required the continual efforts of every person in the organization; as a result, he urged managers to invest in the problem-solving capabilities of the workforce and to spend their time learning from the workforce "on the job floor" (Mann, 1989). These two big ideas—seeing the organization as a system and empowering continued learning and discovery across the workforce—formed the basis of Deming's management philosophy.[7]

Toyota's rise to dominance between the early 1950s and the 1980s is probably the most studied example of continuous improvement in action.[8] During this time, Toyota experienced unprecedented growth in sales while other U.S. automakers plateaued or declined. Toyota's success is attributed not to specific technological advances but to its management philosophy and to a set of practices that continues to guide the company's current day-to-day operations.

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[6] The formal definition of a system is a "set of element or parts that is coherently organized and interconnected in a pattern or structure that produces a characteristic set of behaviors, often classified as its "function" or "purpose" (Meadows, 2008). In organizations, the system includes tools, people, and the processes with which they do work.

[7] Deming summarized his management philosophy in his two seminal works that he published towards the end of his life. In *Out of the Crisis* (1986) he outlined *14 points for management* providing specific guidance to leaders about how to manage and run a continuous improvement organization. In *The New Economics*; *For Industry, Government and Education* (1993), Deming outlined the disciplines that managers would need to draw on in order to manage continuous improvement organizations.

[8] Notable books on Toyota include Jeffrey Liker's *The Toyota Way* (2004), Mike Rother's *Toyota Kata* (2009), James Womack and et al's *The Machine that Changed the World* (2007), and Stephen Spear's *The High Velocity Edge* (2010).

All employees are responsible for doing their work as well as improving it, with the primary goal of meeting customers' needs. Toyota's approach is considered the precursor to Lean, one of the predominant improvement methodologies used today by a wide range of industries.

Interestingly, Deming's philosophy was slow to spread from Japan to the United States despite the fact that Deming was an American and taught primarily in the US. In 1980, CBS aired the documentary *If Japan Can, Why Can't We?*, which highlighted how Japan, drawing largely on Deming's advice, captured the global automotive and electronics markets. Some American business leaders continued to dismiss Deming's ideas, attributing Japan's success instead to its "unique culture," or questioning the applicability of the approach beyond manufacturing. However, a handful of leaders at companies such as Ford and Alcoa began to take up continuous improvement in the 1980s and 1990s. Alcoa, one of the world's largest producers of aluminum, under the leadership of Paul O'Neill, used continuous improvement to become one of the safest and most profitable large manufacturing employers in the United States. During O'Neill's 13-year tenure, Alcoa's lost-workday rate due to injury dropped from 1.86 days per person annually to 0.23, while its market value skyrocketed from $3 billion in 1986 to $27.5 billion in 2000.[9] According to Stephen Spears, a senior lecturer at MIT, who has written extensively about the use of continuous improvement in Alcoa, Toyota, and other organizations, "Alcoa expected its leaders at all levels to develop the organization's ability to manage work in such a way as to see problems, solve problems where they were seen in order to build new knowledge, and spread that knowledge so it would be useful throughout the organization" (Spears, 2010, p. 100). These results laid the foundation for the more widespread uptake of continuous improvement in other industries, including healthcare.

The Spread of Continuous Improvement to Healthcare

One of the driving pioneers in bringing continuous improvement into healthcare was Don Berwick, who first became aware of Deming's work when he was a physician at the Harvard Community Health Plan (HCHP) and eventually founded the Institute for Healthcare Improvement (IHI). In *Best Practice: How the New Quality Movement is Transforming Medicine*, Charles Kenney (2008) recounts Berwick's first exposure to Deming's management philosophy at one of Deming's workshops in 1986. At first, Berwick struggled to connect the lessons from manufacturing to healthcare, so he left the workshop early and flew home after the first day. He woke up that night with an epiphany, suddenly seeing how to transform patient care by managing hospitals as a system instead of discrete parts and integrating routines that support continual learning and discovery. Berwick flew back to the workshop the next morning and became an earnest student of continuous improvement. He sought out industry leaders to learn more about how the ideas were applied in practice and joined forces with a handful of other healthcare leaders to translate these lessons to medicine. In 1991, he founded IHI, which sought to improve the quality, safety, and value in healthcare through the "science of improvement" (Kenney, 2008).

[9] Alcoa's lost-workday rate continued to improve after O'Neill's departure. In 2013, it posted its safest year ever with a lost-workday rate of 0.085.

It wasn't until a decade later, after the publication of two Institute of Medicine (IOM) reports, that the continuous improvement movement in healthcare took off. The first publication, *To Err Is Human: Building a Safer Health System* (Institute of Medicine, 2000), brought widespread public attention to the crises of patient safety in the United States, calling for the redesign of the healthcare system. The second publication, *Crossing the Quality Chasm: A New Health System for the 21st Century* (Institute of Medicine, 2001), articulated a vision for what an improved healthcare system might look like and how continuous improvement could help achieve it. Together, these reports are often cited as the call to action that led to the dramatic uptake of continuous improvement in the field, as healthcare organizations nationwide began to seriously question and evaluate their quality of patient care.

One of the first hospitals to answer that call was Cincinnati Children's Hospital Medical Center (CCHMC), which today is considered one of the premiere improvement organizations in the country. CCHMC began its improvement journey in 2001. Its first effort at continuous improvement was organized as a project focused on improving the care of children with cystic fibrosis. A team of five doctors and one nurse received training in quality improvement, and in the first year, the hospital's national ranking in cystic fibrosis went from 100th to 50th; by 2008, CCHMC was near the top of the list. Another early effort sought to improve the care of children with asthma, and again, the hospital achieved notable results. Between 2003 and 2008, CCHMC reduced hospital admissions due to asthma by 50 percent, significantly reducing the disparity in admissions between low-income and high-income patients. This resulted in cost savings for the hospital as well as a 24 percent reduction in the number of school days missed by patients and a 30 percent reduction in workdays missed by parents (Kenney, 2008). Over time, continuous improvement moved from being used to tackle isolated problems to being fully integrated into the day-to-day work of the hospital. In 2005, CCHMC set as its central mission, "We will be the best at getting better" (p. 132, Kenney, 2008). Today, continuous improvement is built into the job description of all doctors who work there, the hospital runs numerous training programs in continuous improvement for individuals inside and outside the organization, and leadership promotion is linked to publishing in quality improvement journals. CCHMC is a prime example of what it means to be a continuous improvement organization.

In addition to improving outcomes at individual hospitals, continuous improvement has been effectively used to improve outcomes across large healthcare networks. For example, in 2009 Kaiser Permanente launched a continuous improvement effort to reduce death from sepsis across a network of twenty-one hospitals in Northern California. Deaths from sepsis across these hospitals decreased an impressive 11 percentage points from 21.2 percent in 2009 to 9.5 percent in 2012 (Whippy et al., 2011). Similarly, Project Fives Alive!, a large-scale partnership with healthcare providers across Ghana, reduced infant and child mortality by 66 percent between 2008 and 2015 using continuous improvement methods (Sodzi-Tettey et al., 2015).

Indeed, since the release of the two reports from the IOM in 1999 and 2001, the use of continuous improvement has spread widely in healthcare in the United States and across the world. A number of hospitals have staff members that specialize in continuous improvement,

more medical programs include continuous improvement as part of their training programs, and the use of continuous improvement to improve safety and patient care is common practice in many hospitals.[10] This is a notable shift from the early 1990s, when skepticism of continuous improvement was the norm.

Continuous Improvement in Education

Interestingly, continuous improvement also made its way into the education sector in the late 1980s. While it did not spread as widely in the field as healthcare, there has always been a small contingency of schools and districts engaged in continuous improvement to improve organizational performance and student outcomes. Indeed, many of the national quality improvement associations[11] offer services targeted specifically for education organizations, and since 1988 when the competition first began, 11 education organizations have received the Malcolm Baldrige National Quality Award.[12]

However, in recent years, continuous improvement has begun to gain more widespread attention in education. Some of this can be attributed to a backlash against the compliance and accountability policies of the early 2000s. In addition, there has been increased interest in school and district inquiry models, such as Datawise's Improvement Process, Partners in School Innovation's Results Oriented Cycles of Inquiry (ROCI) model, as well as Michael Fullan's coherence framework and Peter Senge's work on learning organizations, all of which promote ideas congruous with continuous improvement. Furthermore, the Carnegie Foundation for the Advancement of Teaching, under the leadership of Anthony Bryk, has spent the last decade spearheading efforts to integrate the discipline of improvement science into education, drawing insights from healthcare, in particular Berwick's IHI.[13] Finally, inclusion of continuous improvement language in the 2015 reauthorization of ESSA and recent large-scale investments in networked improvement by the Gates Foundation[14] have fueled an even greater uptake of the approach, further legitimizing its use in the field.

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[10] While continuous improvement has spread through healthcare there is still a great deal of variation in across healthcare organizations in whether and to what extent they have invested in continuous improvement.

[11] Associations include: 1) American Society of Quality (ASQ), asq.org; 2) American Productivity and Quality Center (APQC), www.apqc.org; 3) The W. Edwards Deming Institute, deming.org; 4) National Institute of Standards and Technology, Baldrige Performance Excellence Program, www.nist.gov/baldrige.

[12] The Malcolm Baldrige National Award is the highest level of national recognition for performance excellence given by the US Department of Commerce. The award focuses on performance in five key areas: 1) product and process outcomes, 2) customer outcomes, 3) workforce outcomes, 4) leadership and governance outcomes, and 5) financial and market outcomes. Up to 18 awards are given annually across six eligibility categories: manufacturing, service, small business, education, health care, and nonprofit. To receive the award, an organization must have a system that ensures continuous improvement in overall performance in delivering products and/or services and provides an approach for satisfying and responding to customers and stakeholders.
For more information: www.nist.gov/baldrige/baldrige-award.

[13] https://www.carnegiefoundation.org/blog/reflections-on-the-best-practice-learning-from-the-emergence-of-quality-improvement-in-healthcare/

[14] http://k12education.gatesfoundation.org/what-we-do/networks-for-school-improvement/

More importantly, schools and districts that have invested in continuous improvement are beginning to see results. For example, between 2009 and 2014, Fresno Unified School District increased its graduation rates from 69 percent to 79 percent, and its college eligibility rates from 32 percent to 48 percent, as measured by California's A-G completion rates, which are required for admission to the University of California (UC) and California State University (CSU) systems, as a result of continuous improvement efforts (Haxton & O'Day, 2015; Aguilar et al., 2017). New Visions for Public Schools, a network of public schools in New York City, used a continuous improvement approach and a new data management system to improve its on-time graduation rates by streamlining its course assignment process and tracking student progress in real time. Between 2013 and 2017, graduation rates in the New Visions for Public Schools network increased by 9.1 percent and college readiness rates increased by 16 percent.[15] Finally, in 2017, students in the Carnegie Math Pathways, an improvement network that includes almost 100 community colleges and four-year institutions across the country, were three to four times more likely to succeed in earning a college credit in math in half the time in comparison to their counterparts in traditional developmental math pathways (Huang, 2018).

A handful of school districts have also adopted continuous improvement as a management strategy to transform how their entire organizations do business. For example, Montgomery County Public Schools (MCPS), which began its organizational transformation in 1999 under the leadership of Superintendent Jerry Weast, saw a dramatic close in its achievement gap over the next decade through its adoption of continuous improvement. By 2009, the proportion of students successfully completing Algebra 1 or a higher level math course with a grade of C or higher increased 23 percentage points from 43 to 66 percent; for Hispanic students, it increased 30 percent from 16 to 46 percentage points and for African American students, it increased 26 percent from 21 to 47 percentage points. Student AP participation more than tripled, and student performance on AP exams (receiving a score of 3 or higher) more than doubled. Furthermore, the percentage of African American graduates in 2009 who earned at least one AP exam score of 3 or higher was more than three times the state average and more than five times the national average. Much of this was achieved by increasing spending on instruction and reallocating resources to schools in need of extra support through administrative savings accrued from improving management efficiency. MCPS lowered the percentage of the budget spent on central and school-based administration from 8.4 to 8.1 percent during a time of dramatic increase in student enrollment. In 2011, MCPS received the Malcolm Baldrige National Quality award for its achievements (MCPS, 2010).

In Wisconsin that same year, Pat Greco took the helm of the School District of Menomonee Falls (SDMF), marking the start of its continuous improvement journey. When Greco first arrived, the district's high school failed to meet expectations for students with special needs under NCLB, and student AP participation and success were low. In addition, its middle school had one of the highest suspension rates in the state, and a local magazine named it one of the highest spending, underperforming districts in the area. Furthermore, the district experienced severe budget cutbacks due to revenue limits passed by the state. Greco took bold

[15] https://www.carnegiefoundation.org/get-involved/spotlight-on-quality-in-continuous-improvement/new-visions-for-public-schools/

steps and invested heavily in training *every* district employee in continuous improvement. In 2014, the board made "the utilization of continuous quality improvement at all levels of the organization" district policy (SDMF, 2017). Fast-forward a few more years and the district has made tremendous progress across its entire system. Its AP participation rate has increased from 10.6 to 35.1 percent, and the student success rate on the AP exam (scoring 3 or better) has increased from 61 to 75.5 percent. Moreover, the number of suspensions at the middle school dropped from 283 to 60 from the 2010/11 school year to the 2015/16 school year and its expenditures on energy, medical and dental insurance, and workman's compensation all dropped significantly.

Because recent interest and policy attention are likely to produce an uptake of continuous improvement in California and across the country, these pioneers in the field serve as important bright spots from which to learn. However, what is also needed is a common language to describe what continuous improvement looks like in practice and how it stands in contrast to previous reform efforts. In the next section, we provide a more detailed definition of continuous improvement and the ways in which the principles of continuous improvement can be applied in practice in education.

Defining *Continuous Improvement*

In a colloquial sense, the term continuous improvement is used to describe an ongoing effort in pursuit of persistently higher levels of performance. The frequent use of the term in everyday settings can lead to the presumption that it needs no further definition. However, as demonstrated by the history of continuous improvement described in the previous section, continuous improvement represents much more than an aspiration. Rather, continuous improvement is a well-established approach with an associated theory and set of practices. Despite models from other industries, a lack of clear guidance about what it means to engage in continuous improvement in education continues to present a significant barrier to its successful uptake at scale.

As we will describe in more detail later in the paper, district leaders in California describe the difficulty of navigating an environment where the state policymakers, support providers, and peer organizations are using the term continuous improvement but appear to have different meanings. To help make sense of the emergent proliferation of meanings surrounding continuous improvement, in this section we first provide a description of how continuous improvement is different from other reform strategies. Next, we provide a set of definitions related to the most prominent uses of the term in education.

Distinguishing Continuous Improvement From Other Reform Efforts

One way of defining continuous improvement is in contrast to other dominant reform strategies such as accountability, performance management, professional learning and innovation. Presumably, these other reforms also have as one of their central motivations the

intention to improve performance.[16] Continuous improvement represents a different strategy for pursuing higher levels of performance. As such, it utilizes distinct mechanisms and relies on its own set of assumptions. Below, we describe how continuous improvement differs from these other reform strategies and summarize a set of distinguishing assumptions behind a continuous improvement approach in Table 1.[17]

In recent years, federal policies such as No Child Left Behind and Race to the Top have propelled the use of accountability and performance management strategies in education, aimed first at districts, then schools, and finally teachers. Performance management and accountability strategies principally work by measuring performance and applying pressure (or providing rewards) to get to results. Underlying these approaches is an assumption that the most effective mechanism for improving performance is clearly defining outcomes and motivating workers and managers to achieve them.

Like accountability and performance management, a continuous improvement approach places a premium on clearly identifying outcomes of interest. However, it assumes that the design of the system[18]—not a lack of will or motivation in the workforce—is the main cause of low performance. Continuous improvement approaches work by engaging the workforce to identify and then improve the key causes of problematic outcomes, which necessarily lie upstream from end-of-the-line outcomes of accountability systems. For example, New Visions for Public Schools discovered that the processes for numbering courses and assigning students to high school courses as early as ninth grade impacted whether they graduated from high school on time. Through detailed work on improving the efficacy and reliability of a specific process--course enrollment-- they were able to impact the outcome they cared about—graduation.[19] In continuous improvement approaches the attention is paid to the specific processes of work, and the workforce is actively engaged in experimenting to improve these processes. In contrast to performance management approaches that leave the specific actions to be taken as a black box, continuous improvement organizes people to discover effective actions and embed them into the overall design of how work gets done.

A second line of educational reforms aimed at professional learning has also been popular in recent years. These approaches—which include the proliferation of communities of

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[16] We use the term "reform strategies" to talk about dominant ways that policy-makers and organizations go about pursuing better performance. We use the terms performance, results, and outcomes in a broad sense, not confined to test scores as a narrow definition of achievement.

[17] This section represents a summary of key distinctions described by Imai (1986); Liebman and Cruikshank (2017); Bryk et al. (2015); and Berwick, James, and Coye (2003).

[18] Throughout the section, we use the term system not as it as colloquially used to refer exclusively to the central office of a school district (e.g., "we need to pay attention to the system level"). Rather we use a more technical definition, coming out of the systems thinking literature: "A system is a set of things interconnected in such a way that they produce their own behavior over time" (Meadows, p. 2). Applied to organizations these elements or parts include work processes, policies, tools and materials, structures, and norms that interact with one another to influence the day-to-day practice of education.

[19] https://www.carnegiefoundation.org/get-involved/spotlight-on-quality-in-continuous-improvement/new-visions-for-public-schools/

practice and professional learning communities—focus on empowering and engaging teachers to collaboratively reflect on their practice with their peers. Underlying these approaches is an logic that professional inquiry will lead to new and better ways of delivering instruction.

Like reforms promoting professional learning, continuous improvement approaches also leverage practitioner inquiry as a key resource for improving outcomes. As preeminent organizational theorist Masaaki Imai (1986) describes, continuous improvement presumes a "profound faith in the worker" and assumes that those closest to the work are best positioned to learn about the work. However, inquiry in a continuous improvement approach is not limited to a particular domain (e.g., instruction) but is widespread throughout the effort. In Menomonee Falls, for example, leaders, teachers, and operational staff (including bus drivers) all engage in inquiry to improve their work. Also in contrast to many professional learning endeavors, a key output of inquiry in continuous improvement is the discovery of practices that are spread and become standard work for the organization. For example, once Cincinnati Children's Hospital discovered a useful intake protocol for children with asthma, this protocol became the default way of doing work across the hospital (see Bryk et al., 2015, ch. 5). Far from static, these standard practices are regularly updated through experimentation.

Finally, the education sector also has invested in developing and disseminating educational innovations as a way to promote progress. Typical innovations include new curriculum, educational technologies, and ways of organizing instruction (e.g., small schools, personalized learning). Innovation-oriented approaches assume the main barrier to better performance is the lack of the right ideas, programs, or technologies.

In comparing the Eastern and Western ways of going about business in the 1980s, Imai noted the Western tendency to "worship the altar of innovation" (p. 23). Imai believed in the power of innovation and in fact wished to bring more of it to the East. But he believed that the investment in innovations needed to be combined with a focus on people and a continuous effort to make small improvements. Continuous improvement approaches often involve the introduction of new practices and technologies. However, large one-time investments in innovations are accompanied by daily learning about how to get those innovations to happen in practice. Continuous improvement begins with people and how they work, leverages the introduction of "new things" only when they are necessary to solve problems, and engages front-line workers not only as the recipients of change but as key to learning how to get innovations to work.

The assumptions that distinguish continuous improvement from other strategies for improving outcomes are summarized in Table 1. The assumptions represent a set of beliefs on which a continuous improvement approach is predicated. The point here is that continuous improvement is more than a slogan or aspiration; it represents a distinct theory of action about how to make progress and, as such, focuses on distinct mechanisms. To fully take up a continuous improvement approach requires taking up this underlying theory of action.

Table 1. Distinguishing Features of a Continuous Improvement Approach

ASSUMPTION	DESCRIPTION
Systems produce outcomes.	Continuous improvement assumes that it is the system and not individuals that produces current outcomes and accordingly focuses attention on system design and operation.
Efforts focus on key processes.	Improvement efforts focus on the processes that produce the outcomes as opposed to focusing exclusive attention on the outcomes themselves.
Progress requires collective learning and discovery.	Improvement efforts are structured to encourage workers throughout the organization to engage in collective learning about their practice. Data and problem-solving methodologies are used to make assumptions about cause and effect explicit, and to test ideas in practice.
Front line workers are uniquely situated to learn how to get ideas to work	Those directly responsible for implementation of a practice (e.g., classroom teachers) are actively involved in learning how to get that practice to work in context. Their unique knowledge of the day-to-day work is a form of expertise necessary for effective improvement.
As effective practices are discovered they are spread throughout the organization.	As effective practices are discovered they are spread and become standard work for the organization. These practices are continually updated and adapted to context through local experimentation.

Multiple Uses of the Term Continuous Improvement

Thus far, we have described continuous improvement in its broadest sense, as an approach to making progress. However, the term continuous improvement can and is frequently used to describe many different, specific elements of an approach, including: (a) continuous improvement **cycles**, (b) continuous improvement **methodologies,** and (c) a continuous improvement **culture**. References to different aspects of continuous improvement can muddle conversations about the big-picture goal of the various efforts. To help make sense of the emergent "word soup" surrounding continuous improvement, we briefly describe each of these common uses of the term. We then turn back to what it would mean to take on continuous improvement as a management philosophy that can be applied to **organizations,** and more recently, to **networks.**

Continuous improvement cycles*.* The term continuous improvement is often used to describe cycles of action and reflection. In practice, continuous improvement cycles take

different forms but tend to have the same key elements, organized in a repeating cycle. These include:[20]

- setting goals (using data),
- creating an action plan or intervention,
- implementing or acting on the plan,
- assessing the results (using data), and
- reflecting and adjusting plans.

Continuous improvement cycles are purposely generic, enabling them to be applied to a wide range of activities (e.g., organizational strategies, programs, instructional practice) and by a diversity of stakeholders (e.g., teachers, coaches, principals, district office leaders). Some use continuous improvement cycles to structure annual planning processes or to describe semester-long projects, while others engage in cycles weekly or even daily. As a result, the specific tools that are used to guide continuous improvement vary.

In a continuous improvement approach, these cycles are used to structure learning about specific organizational practices, disentangling what seems to be working from what is not, and learning about how to adapt various practices to local contexts. In the broader continuous improvement field, these cycles are typically structured as Plan-Do-Study-Act (PDSA) cycles (see Figure 1) or Plan-Do-Check-Act cycles[21] where "the scientific method becomes pragmatic" (Moen & Norman, 2010, p. 3). Similar to an experiment, recording and comparing results to predictions play a key role in generating knowledge. The *plan* encompasses setting goals and creating an action plan. Predictions are made and the appropriate data are identified. The *do* involves implementing the plan and observing what happens. During the *study* (or *check*) data collected during the cycles are used to compare the predictions with the results. In the *act* step, the learning from the cycle is used to determine next steps and the cycle begins again.

[20] For a review of the structure of different continuous improvement cycles, see Park, Hironaka, Carver, and Nordstrum (2013).

[21] For a history of the use of PDSA cycles, see Moen and Norman (2010). For more on their structure and use, see Langely et al. (2009). For the use of PDSA cycles in education, see Bryk et al. (2015).

Figure 1. Plan-Do-Study-Act Cycle[22]

In education, several reform efforts have provided other tools and structures for teachers and schools to engage in similar cycles of action and reflection around instruction (e.g., Professional Learning Communities, Lesson Study, Action Research). Other efforts have focused on using data to reflect on and assess practice (e.g., Datawise, Results-Oriented-Continuous-Improvement).[23] The cycles are similar to continuous improvement cycles, but they tend to focus more on reflection and inquiry without necessarily the intention to discover and spread and become standard work for the organization. This is not surprising as these reform efforts largely grew out of a different theory of action that invested in professional learning as the key to improvement.

Continuous improvement methodologies.[24] Continuous improvement cycles are often only one out of a broader set of problem-solving tools that comprise a continuous improvement *methodology*. For example, Toyota originally identified and trained its workforce in seven key tools that were flexibly applied to solve specific problems, later expanding the toolkit to 14 (Imai, 1986). Most continuous improvement approaches put forth a range of tools that include techniques for diagnosing problems, visualizing data, generating solutions, and structuring social interactions.[25] A variety of continuous improvement methodologies are currently used in education, each articulating a set of tools, principles, and social practices. A list of prominent continuous improvement methodologies is provided in Appendix A.

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[22] Langely et al. (2009).

[23] For an overview of the use of continuous improvement cycles in education, see Appendix A in Park et al. (2013).

[24] A note on language. Merriam-Webster defines a methodology as "a body of methods, rules, and postulates employed by a discipline." Many of the examples listed in this section would consider themselves more of an approach, rather than a methodology. However, we use the term methodology here for two reasons: (1) we want to preserve the language of continuous improvement approaches to describe the larger umbrella of reforms that are distinguishable from accountability and professional learning approaches, and (2) we are principally interested in the range of "specific guidance and tools" that education practitioners navigate as they take on continuous improvement. Whether or not they define themselves as a method, the guidance they do provide is what's being reacted to and rapidly taken up.

[25] In some cases these tools are embedded inside a broader continuous improvement cycle—often in the planning phase. In other cases these are separate tools that are used alongside cycles of inquiry.

Some of the available methodologies trace their roots back to the theories of Deming, emerging as the pragmatic manifestation of putting continuous improvement into action. Six Sigma came out of Motorola's approach to quality improvement that was eventually spread to General Electric (LeMahieu, Bryk, Grunow, & Gomez, 2017). Lean is the methodology that was developed by Toyota, spread throughout Japan and eventually to the United States. The Improvement Guide, developed by the Associates for Process Improvement, was designed based on the direct experience of the authors working with organizations across multiple sectors in the United States to apply Deming's principles. Each of these three methodologies has also made its way into education (for a review of these methodologies and the applications of various other improvement methodologies, see LeMahieu et al., 2017).

Other methodologies that are used in education do not stem directly from Deming but are derived from change efforts that have successfully achieved results. Deliverology was a management strategy invented by leaders within the UK government in the early part of the century and has since spread to government organizations in the United States. Positive Deviance was created based on a project in Vietnam that was successful in addressing child malnutrition. The success of this effort was used to create a six-step model that could be applied more generally to find and implement solutions to a broader set of problems.

Finally, a number of methodologies for continuous improvement were developed to bridge research and practice. Implementation Science began in healthcare in the middle of the last century to address the gap between medical interventions as they were designed in research and how they were implemented in practice. Newer to the scene, Network Improvement Communities (NICs) and Design-Based-Implementation Research originated in the field of education as ways of promoting more useful and productive relationships between research and practice.

In navigating the range of options currently in use, there are relevant differences among these methodologies, most notably (a) *who* the problem-solver is, (b) the *kinds of problems* the methodologies are designed to solve, and (c) the s*pecific tool sets* they employ. Lean methodologies and NICs, for example, engage everyone in improvement while Six Sigma relegates the responsibility for improvement to a small team.

Successful continuous improvement efforts have used a range and sometimes a combination of methodologies. Across the healthcare sector, you will find successful applications of The Improvement Guide, Implementation Science, and Lean methodologies. Menomonee Falls draws from the Improvement Guide, Six Sigma, and Lean methodologies to structure different kinds of improvement in the organization. The selection of a common methodology—or methodologies—that can be used to guide problem-solving is arguably more important than the particular methodology that is applied. Having a common improvement methodology creates a common language and enables expertise to be built with the practical tools of improvement over time.

Continuous improvement culture. The term continuous improvement is also frequently used as a reference to a particular kind of culture. For example, California lawmakers articulate their commitment to continuous improvement as a commitment "to cultivating and supporting a system-wide *culture of continuous improvement*" [emphasis added][26] Similarly, as we will describe in Part 2, stakeholders across California describe changes in culture as one of the most notable shifts required in taking a continuous improvement approach.

Several authors have highlighted different, specific aspects of a continuous improvement culture. The definitions share an emphasis on environments that promote professional collaboration and continual learning. Gavin, Edmonson, and Gino (2008) emphasize the creation of a "supportive learning environment" as a key building block for continuous improvement. They define this environment as having four distinguishing characteristics: (1) psychological safety, (2) appreciation of differences, (3) openness to new ideas, and (4) time for reflection (p. 3). Lucas and Nacer (2015) outline "15 habits of an improver" in an attempt to describe the daily routines and mindsets involved in continuous improvement. They describe five interlocking categories, each with three sub-habits: (1) learning, (2) influencing, (3) resilience, (4) creativity, and (5) systems thinking. Deming's eighth principle in his *14 points on quality management* recommends: "Drive out fear. Encourage effective two-way communication and other means to drive out fear throughout the organization so that everybody may work effectively and more productively for the company" (Deming, 1986).

The emphasis on the cultural elements of continuous improvement often comes out of a motivation for preventing continuous improvement from being reduced to a simple set of tools. These cultural elements are also notable because they stand in stark contrast to many of the compliance- and accountability-focused ways of working. However, there is some danger in limiting conversations about continuous improvement to what can be amorphous conversations about culture. In order for people across the education landscape to engage in continuous improvement, people need not only a safe space but also the skills, resources, and capacities to engage in productive organizational learning.

Continuous Improvement Organizations

Much of the literature on continuous improvement comes from scholars studying continuous improvement *organizations* and documenting what it is that these organizations do. Dubbed "continuous improvement organizations" or "learning organizations,"[27] these are places that achieve exceptional performance on a wide range of organizational outcomes, can adapt to dynamic environments, and often do so with fewer resources and mistakes than their

[26] Superintendent's Advisory Task Force on Accountability and Continuous Improvement, (2016). *Preparing All Students for College, Career, Life, and Leadership in the 21st Century*, p. 3. California Department of Education, Sacramento, CA.

[27] Spears (2010) uses the term "high velocity organizations." Liebman and Cruikshank (2017) refer to governance structure they call "democratic experimentalism."

peers (Spears, 2010; Senge, 2006; Rother, 2009). Toyota, Cincinnati Children's Hospital, and Alcoa are a few examples of continuous improvement organizations that have been widely studied.

To be sure, the shifts in culture, cycles of inquiry, and common problem-solving methodologies described above are important components of what these organizations do. In fact, many of the practical tools and principles that are available as resources are the by-products of these organizations figuring out how to apply the concept of continuous improvement in practice. Less visible are the mechanisms that embed continuous improvement as the way of doing work throughout the organization. In the words of Spears, what makes these organizations remarkable is their "approach to managing exceptionally complex work that muster[s] the hands *and* minds of hundreds of people so that improvement, innovation and adaptation [are] unending" (Spears, 2010, p. 15).[28] Continuous improvement in these organizations is not merely an espoused value or isolated project; it's integral to the way work gets done. This brings us back to the origins of continuous improvement, as a way of managing an organization.[29]

Rother (2009) defines management as "the systematic pursuit of desired conditions by utilizing human capabilities in a concerted way" (p. 15). By virtue of their position, organizational leaders have to make day-to-day decisions about how to use the resources at their disposal in order to achieve organizational goals. Management deals specifically with how leaders oversee, direct, and utilize their *human* resources. The management philosophy of any particular organization is difficult to see. Managers themselves struggle to explicate why they manage the way they do (Spears, 2010; Rother, 2009). An organization's management philosophy plays out more visibly in the daily work and behavior patterns of people in the organization. Table 2 summarizes how continuous improvement organizations assign roles and responsibilities for three common role groups within organizations.

[28] Garvin (1993) provides a complementary definition of a learning organization: "A learning organization is an organization skilled at creating, acquiring and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights" (p. 3).

[29] Authors also use "internal governance" as a term to refer to how leaders direct and oversee the human resources of the organizations in order to achieve shared goals (for example, see Liebman and Cruikshank, 2017).

Table 2: Roles and Responsibilities in Continuous Improvement Organizations

Role	Expectations
Senior Executives	• Set the general direction for the organization and maintain a constancy of purpose. • Build an infrastructure for improvement that integrates improvement with the daily operation of the organization. • Promote a culture of continuous learning and collaboration across silos. • Invest time and resources into improving processes and developing people to lead these efforts.
Midlevel Managers & Supervisors	• Connect the roles of people to the purpose of the organization. • Facilitate cross-functional improvement teams. Surface common problems across local units. • Support local problem-solving and build capability for continuous improvement. • Establish, maintain, and update standard work. Benchmark solutions and facilitate spread. • Use continuous improvement to remove waste and improvement of own work. • Help people execute on the daily work of the organization with the goal of meeting the needs of the user.
Workers	• Engage in improvement of daily work by making suggestions and testing changes to their practice. • Participate in improvement teams that contribute to the larger aims of the organization. • Execute on the daily work of the organization with the goal of meeting the needs of the user.

Source: Representation based on a summary of descriptions provided by Liebman and Cruikshank (2017), Imai (1986), and Langley et al. (2009).

In continuous improvement organizations, frontline workers play a key role in solving problems as they occur in daily work. They may use continuous improvement cycles to guide this work as well as a broader array of improvement tools. Managers are responsible for supporting this local learning and developing problem-solving capabilities. By virtue of their vantage point, managers also play a role in spreading learning and detecting patterns across sites. Senior leaders are responsible for the design of the system as a whole. They maintain a focus on the central purpose of the organization, create the culture, and provide the resources for the organizational learning necessary to get there.

Underneath these management behavior patterns is a different relationship between leaders and workers in continuous improvement organizations. Liebman and Cruikshank (2017) describe the relationship in this way:

> Instead of enforcing compliance with uniform procedures, the center provides "the infrastructure and services that support the frontline" planning, problem-solving and innovation…. Experimentalism links central and local units to maximize the problem-solving capabilities of each. While local units adapt solutions to their particular conditions, the central unit manages links between them that alert each to the other's innovations and develops common metrics for comparing local results and ensuring that each site serves all members of its population. Together, local and central experimentalist units produce solutions that are expertly crafted, locally tailored, and consistent with public ideals. (p. 419)

Liebman and Cruikshank (2017) describe frontline workers as having "bounded autonomy," lying somewhere between the top-down, compliance-based approaches to management and craft notions of management that provide no constraints on the professional autonomy of the frontline. These notions of autonomy connect directly to the assumptions behind a continuous improvement approach in Table 1.

Organizational frameworks*.* Continuous improvement organizations do not shift their management all at once but rather develop it over time as they take on new ways of working. Spears (2010) points out that this kind of "management is a skill, and like any other skill, it requires practice" (p. 361). Spears suggests starting small, on a process or system that is "reasonably tightly bounded" yet that really matters to the people in the organization (p. 362). Cincinnati Children's Hospital Medical Center, for example, spent five years working intensely on two improvement projects before taking this way of working to the rest of the organization (Tucker & Edmondson, 2011). CEO Paul O'Neill initiated Alcoa's transformation by committing to reducing a problem that affected everyone in the organization—on-the-job injuries. The organization chipped away at this goal over the course of twenty years, simultaneously building the culture and skills of continuous improvement through this work. These investments paid off in the outcomes of the organization.

There are likely as many starting places of creating a continuous improvement organization as there are organizations that have taken on continuous improvement. Numerous frameworks defining the key features of continuous improvement have been created in an effort to provide practical guidance on how to build a continuous improvement organization. Appendix B lists the elements in some of the most used organizational frameworks. Some of these frameworks come from organizations dedicated to supporting continuous improvement organizations (e.g., National Institute of Standards and Technology; Norman, 2007). Others come from studying successful continuous improvement organizations (e.g., Spears, Senge, and Fullan). The various frameworks are more similar than different, each with its own structure for highlighting the dimensions that explain how continuous improvement organizations do what they do. In Table 3, we provide a framework developed by the Institute for Healthcare Improvement (IHI), which describes the organizational capacities necessary for improvement.[30]

[30] We highlight IHI's framework here because it serves as a complete and well-defined summary of the different organizational frameworks available.

Table 3. Institute for Healthcare Improvement's Organizational Assessment of Improvement

Areas	Scale
Leadership for Improvement: The capability of the leadership of the organization to set clear improvement goals, expectations, priorities, and accountability and to integrate and support the necessary improvement activities within the organization	1 = Just Beginning 2 = Developing 3 = Making Progress 4 = Significant Impact 5 = Exemplary
Results: The capability of a organization to demonstrate measurable improvement across all departments and areas	
Resources: The capability of a organization to provide sufficient resources to establish improvement teams and to support their ongoing work and success	
Workforce and Human Resources: The capability of a organization to organize its workforce to encourage and reward active participation in improvement work, clearly define and establish improvement leadership roles, and ensure that job descriptions include a component related to improvement work	
Data Infrastructure and Management: The capability of a organization to establish, manage, and analyze data for improvement in a timely and routine manner to meet the objectives and expected results of the organization's improvement plan	
Improvement Knowledge and Competence: The capability of an organization to obtain and execute the skills and competencies required to undertake improvement throughout the organization	

Source: Institute for Healthcare Improvement (2003).

The IHI framework is organized around six organizational capabilities. It is intended for organizational leaders to reflect on and assess their progress towards becoming an improvement organization and stimulate discussion about areas of strength and weakness. Building improvement capability is presumed to be developmental, pursued through investments in people and infrastructure over time. Once developed, this is a generalized capability that enables the organization to learn how to achieve outcomes even as they shift in different directions.

Continuous improvement networks*.* More recently, continuous improvement has been used to organize the work of professional networks. Project Fives Alive! and the Carnegie Math Pathways are two examples of improvement networks that have successfully used continuous improvement to organize efforts to make progress on collective outcomes of interest. In addition to applying continuous improvement internally to their organization, Cincinnati Children's Hospital Medical Center currently runs nine active "learning networks" that utilize continuous improvement in order to improve health outcomes in their community and beyond. In education, the Gates Foundation and the Carnegie Foundation for the Advancement of Teaching have made networks a central part of their organizational strategy.

Improvement networks take on many of the same characteristics as continuous improvement organizations, requiring many of the same role expectations and capabilities. However, they also represent a unique organizational form, without the formal authority and ability to direct discretionary effort (Cincinnati Children's Medical Healthcare Center; Bryk et al., 2015). Improvement networks usually form around a specific problem or outcome. A "hub" or "backbone organization" coordinates the network and houses the centralized capacity.

Several models have been developed to provide more practical guidance on how to organize a network engaged in continuous improvement. The Breakthrough Series Collaborative model emerged from healthcare (Institute for Healthcare Improvement, 2003). The model was originally designed as a way of spreading known solutions but has more recently been adapted to structure networks engaged in discovering solutions. As described above, The Carnegie Foundation for the Advancement of Teaching created the Networked Improvement Community model for taking on pressing problems in education. Finally, Collective Impact models have emerged in order to organize cross-sector collaborations aimed at improving outcomes for children (Kania & Kramer, 2011).

Network organizations have particular advantages for problems that require diverse forms of expertise or occur in small numbers at one particular site (e.g., rare healthcare conditions). Networks accelerate learning by providing opportunities to learn across organizational boundaries, leveraging the "wisdom of crowds" and creating the conditions in which ideas may spread from one place to another (Cincinnati Children's Medical Healthcare Center; Bryk et al., 2015).

Conclusion

Continuous improvement is rapidly becoming a favored reform strategy for pursuing higher levels of performance. As such, continuous improvement impacts outcomes through distinctly different mechanisms than previous reform efforts that have focused on accountability and professional learning. There is reason to be optimistic about continuous improvement as a reform strategy; the approach has been used in multiple sectors as well as a handful of education organizations with positive results.

The successful examples of continuous improvement have come from investing in continuous improvement organizations or networks. Herein lies the potential for transforming educational performance statewide. Implementing specific tools or practices is important but getting them to scale across a district requires a management approach that recognizes that better outcomes are the result of improving the entire system and engaging everyone in the organization in improvement. However, enacting this management philosophy in practice is extremely challenging. Because the tools and methods of continuous improvement are more concrete and accessible, there is a tendency to use them mechanistically without a deep understanding of the principles underpinning them. This is not a challenge specific to education. According to Spears (2010), other organizations failed to achieve the same results using continuous improvement as those achieved in companies such as Toyota because "[the

idea of learning and discovery] had gotten lost as people focused on the particular tools and artifacts used in the workplace at the expense of understanding the principles of how those systems were managed" (Spears, 2010, p. 15). In the absence of the management philosophy, continuous improvement can easily be reduced to an isolated project, superficial use of the tools, or espoused but not lived values. As we describe in the next section, this danger is all too real in California. As policymakers and practitioners across the state increasingly invest their time and resources in continuous improvement, there is a tension between, on the one hand, the urgent desire to improve outcomes through quick fixes and, on the other hand, the need to foster deep engagement and understanding in the principles underlying a continuous improvement approach as well as to engage in learning and discovery. Positioning continuous improvement as a management strategy for organizations has additional implications for which policy levers are most useful. How does policy incentivize and support the management shifts and development of organizational capabilities that continuous improvement implies? In the next section, we turn to California's efforts to spur continuous improvement across the state. We look at how the current supports align with what our definitions of continuous improvement suggest and how districts currently understand and are experiencing continuous improvement in their contexts. We end with a discussion about the ways in which California might reposition its efforts to promote continuous improvement as a management strategy and the potential for this approach to facilitate the broader uptake of continuous improvement practices across the state to improve system-wide outcomes.

Part 2. A Case in Progress: Continuous Improvement as a Statewide Strategy in California

Recently, California policymakers enacted a set of policies intended to spur the use of continuous improvement across the state. In 2013, the Local Control Funding Formula (LCFF) ushered in a new system of accountability and support that gives school districts more flexibility in how they invest resources to meet locally defined goals. In exchange for this flexibility, districts are required to detail their plans for improving student outcomes and how dollars will be spent, with particular attention to the state's most vulnerable student populations, in a Local Control and Accountability Plan (LCAP).

Specifically, LCAPs must include a description of each district's annual goals by subgroup as well as a description of the actions and services that the district will provide to meet these goals. Furthermore, districts must conduct and include an annual review of their goals, actions and services from the previous year in their LCAP. In theory, this annual cycle of needs assessment, goal setting, implementation, and review will spur continued improvement. As such, the LCAP process is designed to mirror, in the broadest sense, the cycles of inquiry that are central to continuous improvement efforts.[31]

To inform local districts' goal-setting processes, the state developed and launched the California Schools Dashboard (the Dashboard) in March of 2017. The Dashboard provides online, publicly available data on a range of state and local measures intended to support and

[31] https://www.cde.ca.gov/be/pn/im/documents/memo-exe-jan17item02.doc

inform school improvement efforts.[32] Through the Dashboard, districts can see their performance, or areas of strength and areas of need, on six state indicators and four local indicators by school district, by school, and by subgroup (e.g., English learners, foster youth, homelessness, students with disabilities, ethnicity). Performance on the indicators is color-coded from blue as the highest level of performance to red as the lowest level of performance. Overall performance levels are calculated based on performance in the current year and change from the previous year. The Dashboard is intended to be easy to read so that practitioners as well as community stakeholders can easily access and assess school and district performance on multiple measures. Districts are required to use data from the Dashboard to inform the development of their LCAP. In December 2017, to support these efforts, the California Department of Education developed a webinar to explicate the effective use of Dashboard data to inform the LCAP process.[33] (For more on the Dashboard, see Polikoff, Korn, and McFall, 2018; for more on data use for continuous improvement, see Hough, Byun, and Mulfinger, 2018.)

The release of the Dashboard was part of the rollout of a new accountability system in California. Under this new system, just over two hundred school districts were identified for differentiated assistance and will be served by the "System of Support" currently being developed by state agencies. There are four features of the System of Support that distinguish it from previous efforts to spur improvement in the state: 1) a focus on serving particular student groups, especially those who have been historically underserved; 2) a focus on school districts as well as schools; 3) a focus on capacity-building rather than externally developed interventions; and 4) a continuous improvement approach.[34] County Offices of Education have been tapped as one of the central providers of support for school districts, with other agencies, such as CDE or the California Collaborative for Educational Excellence (CCEE), playing supporting roles. Although not all elements of the System of Support have been fully developed or articulated, strong commitments have been made from leaders at the State Board of Education and the California Department of Education as well as from many county superintendents that the System of Support will be designed around the principles of continuous improvement. Accordingly, as part of the System of Support, representatives from all 58 county offices of education were trained in improvement science, as well as some school district staff. Moreover, many of the counties have used the tools of improvement science to guide their initial work with school districts identified for assistance under the System of Support.

These new state policy structures—LCFF, the California School Dashboard, the LCAP process, and the System of Support—represent a major policy shift from a restrictive, compliance-oriented approach under No Child Left Behind (NCLB) and California's categorical funding programs. California policymakers have conveyed that continuous improvement is an explicit priority through such bodies as the State Superintendent's Accountability and Continuous Improvement Task Force, through policy documents such as California's ESSA plan, guest blog posts in EdWeek by the state's Superintendent of Public Instruction, Tom Torlakson,

[32] For more detail on the California School Dashboard, see https://www.caschooldashboard.org/#/Home.
[33] For more information on the webinar, see https://www.cde.ca.gov/ta/ac/cm/documents/lcapdashboard.pdf.
[34] https://www.cde.ca.gov/ta/ac/cm/documents/statewidesystemofsupport.pdf

and Chief Deputy Glen Price about California's efforts to become "a state of continuous improvement," and the dedication of an entire page on the CDE website to continuous improvement resources.[35] Through these communications and the development of emerging support structures, policymakers have signaled that continuous improvement is the recommended path to achieving better outcomes for California's students.

In this new context, the responsibility for school improvement is increasingly placed upon local school districts, with County Offices of Education (COEs) playing a critical support role (for more on County Offices of Education, see Plank, 2018). Underlying this major policy shift is the idea that local leaders are in the best position to drive real educational improvement and ensure quality across multiple schools and contexts.

As is the case nationally, K–12 education stakeholders in California may have some familiarity with the term "continuous improvement," but these words exist in a different context under the state's new policy structures. To better understand how the state's efforts to spur continuous improvement have impacted the field and what supports are still needed, we conducted a series of interviews with stakeholders across the state. These interviews helped to inform a stakeholder convening that was held in the fall of 2017 to discuss the definition and direction of continuous improvement in the state. Below, we first discuss our methodology and then review the major themes and findings from this project.

Methodology

To evaluate the extent to which California's school districts are engaging in continuous improvement given these new policy and support structures, we conducted interviews with a range of stakeholders, including leaders from state education agencies, COEs, school districts, technical assistance providers, education advocacy organizations, and education associations. Our aim in these interviews was to understand how various actors define continuous improvement, to what extent they are engaged in it, and how state structures are helping or hindering these efforts. Interviews were conducted during the summer of 2017 and utilized semi-structured interview protocols, which were recorded and transcribed. Our research team conducted 41 interviews with 56 leaders from state agencies (n=10), COEs (n=3), local education agencies (n=20), education associations/advocacy organizations (n=3), and technical assistance providers (n=4). Our purposeful sample consisted of technical assistance providers and state level leaders who were responsible for either designing policy to support school districts in executing continuous improvement or supporting districts directly. County Offices of Education and school districts were similarly selected based on identified engagement in continuous improvement, and also to represent variation in enrollment, geography, urbanicity, and student demographics. To analyze, we used a multiple case study design (Yin, 2013), conducting cross-case analyses (Miles, Huberman, & Saldaña, 2013) to identify common definitions and practices across respondent groups (e.g., district leaders, support providers, and policymakers).

[35] See https://www.cde.ca.gov/sp/sw/t1/continuousimprovement.asp

In this paper, we also report on some of the proceedings from the Continuous Improvement Stakeholder Convening organized by Policy Analysis for California Education (PACE) and WestEd in October of 2017. The convening brought together a diverse group of stakeholders from across the California education landscape to explore the potential for collective action in promoting continuous improvement across the state. Participants included nine districts leaders from small and large systems; nine state officials from the California Department of Education, the State Board of Education, and the California Collaborative for Educational Excellence; three leaders from state membership organizations including the California School Boards Association, the California Teachers Association, and the California County Superintendents Educational Services Association; two county office leaders; two foundation representatives; 10 support providers/representatives from advocacy organizations; and 16 researchers working in the area of continuous improvement. The goals of the meeting were to (a) move towards consensus around the definition of continuous improvement in the context of the LCFF and (b) develop a plan to support districts in achieving continuous improvement at scale.[36]

Shared Definitions of Continuous Improvement

One goal of the interviews was to understand how people interpreted continuous improvement, whether these definitions were consistent across participants, and whether the definitions mirrored the literature on continuous improvement. In the interviews with stakeholders, descriptions of continuous improvement were variable and frequently focused more narrowly on a subset of the characteristics of continuous improvement detailed in Part 1. In addition, the definitions often lacked clear descriptions of what continuous improvement would look like in practice. However, when asked about the key shifts in practice that are required for continuous improvement, stakeholders consistently identified three common elements that resonate with the larger literature on continuous improvement:

1. ***Continuous improvement requires a change in culture***. To honestly reflect on outcomes and try new approaches, staff in districts and schools must trust one another enough to be honest about the ways they must improve. In addition, the environment must be perceived as one in which it is safe to take risks. As one district superintendent said, "The system has to be created so that the organization feels safe enough to actually try something different." Many said that this type of organizational change requires supporting the development of positive relationships, garnering buy-in, creating alignment between departments in the central office and the work of schools, and empowering stakeholders at all levels to take responsibility for improvement.

2. ***Capacity needs to be built for people at all levels of the system***. Echoing the words of many, one district leader said, "We're big believers that the way that you're going to improve any system is that you have to build the capacity of the *people* that are in the system." Within many districts, collaboration is central to this approach; many

[36] For a full list of convening participants and further details about the convening, see the meeting summary at https://edpolicyinca.org/publications/continuous-improvement-in-practice.

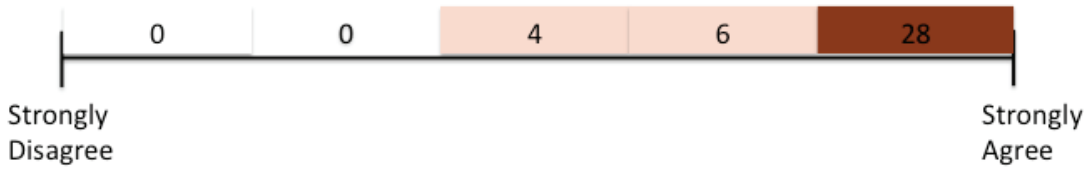
stakeholders reported that building capacity at school sites is about working with one another in a structured, purposeful, and rigorous manner. Accordingly, one district leader reported that they build capacity to improve through "making ourselves available to work with other networks of districts and counties and states." Accordingly, one approach to capacity-building comes through networks run by private support providers, County Offices of Education, or the California Collaborative for Educational Excellence (CCEE). Other approaches for building capacity include professional learning opportunities, formal training, mentoring, and coaching.

3. ***Availability and use of data is of central importance.*** Most stakeholders discussed how essential it is to have real-time data to monitor progress and change course when needed. One county office administrator offered this example: "When it comes to continuous improvement, it's a recognition that we are expected to respond frequently and immediately… so that we can respond to data, and shift the system in order to meet the need of the students on a more regular, more frequent basis." However, having more frequent data, while necessary for continuous improvement, is insufficient. People at all levels of the system also need to know how to make good use of data—analyzing it to understand variations in performance and evaluating whether new investments have changed outcomes. This requires skill development among practitioners and a culture of data use. A district administrator described the need this way:

> I think one of the pieces is that we need to be better at helping our site administrators know how to lead [data] conversations. And how to help them to be very versed in the data. Not only what the data says and where they see the gaps, but what they can do to change that outcome.

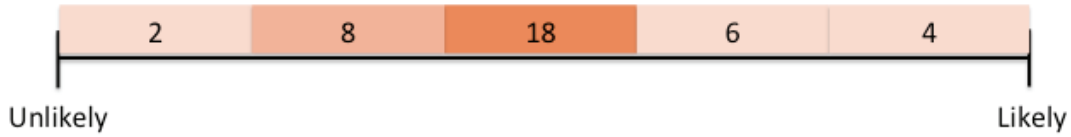
In the interviews, we went in with an open-ended protocol to solicit stakeholders' own definitions of continuous improvement. However, in the stakeholder convening, attendees were presented with a definition of continuous improvement similar to the definition laid out in Part 1 of this paper. When the various aspects of "continuous improvement," were described, stakeholders largely agreed that the state should be working to support districts in becoming "continuous improvement organizations," rather than just supporting them to do improvement cycles or more discrete aspects of improvement methodology. Figure 2 shows the results of an activity in the stakeholder convening, in which participants were asked to indicate their level of agreement with goals the state could have for district engagement in continuous improvement through a "human graph" exercise. Overwhelmingly, participants indicated that districts should work to become "improvement organizations."

Figure 2. Attendee agreement with statement "Districts should be working to become improvement organizations."



At the same time, participants were more mixed on whether the current conditions in the state, including the existing and developing supports and strategies, were sufficient to actually achieve that goal. As shown in Figure 3, when asked how likely we are to reach the goal of districts as improvement organizations with current state conditions, 18 attendees were in the middle, unsure of whether the current structures would result in continuous improvement at scale.

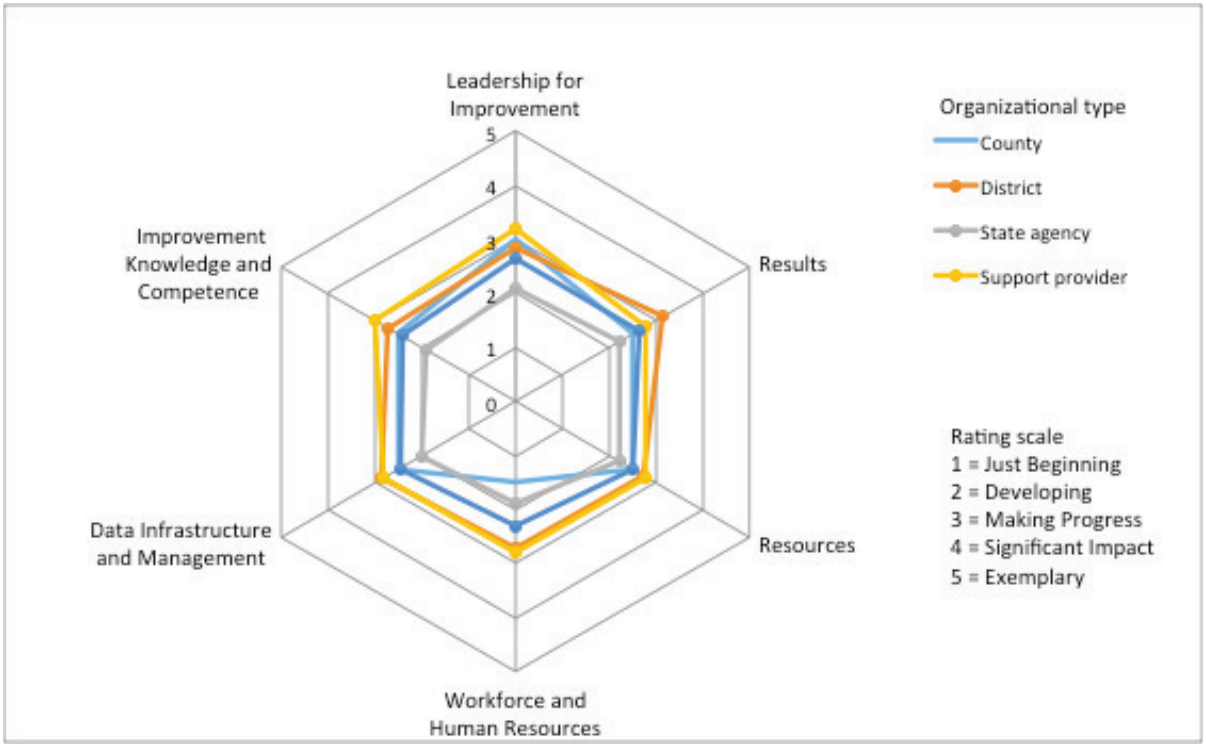
Figure 3. Attendee reports of likelihood that: "We will reach the goal of districts as improvement organizations with current conditions in the state."



Current State of Continuous Improvement in the State

As a way to take stock of the current status of the implementation of continuous improvement in California, in the Continuous Improvement Stakeholder Convening, we asked participants to use the framework presented in Table 3 to evaluate their own organization's improvement capacity, with zero as the lowest rating and 5 as the highest, represented (as averaged values) in Figure 4 by the concentric hexagons. Overall, the ratings on each of the categories indicated that the organizations present were in the early stages of enacting a continuous improvement strategy, with most participants rating their own organizations relatively low. When averaged across all six elements, only two of the groups felt they were "making progress." There was also a small degree of variation in organizational assessment by organization type; most notably, representatives from state agencies rated their organizations lower than others.

Figure 4. Capacity for Improvement (Averaged Self-Assessments)



Similarly, across the interviews there was also wide acknowledgement that continuous improvement is not happening at scale in the state. Most stakeholders reported that they were in the beginning stages of authentic implementation of continuous improvement, despite their best efforts. Even among districts that would describe themselves as farther along, very few reported that they have seen improvements in student outcomes as a result of investments in continuous improvement. Similarly, leaders from education organizations who work with districts reported that there are some districts that are engaging in continuous improvement, but that most are not. As one COE leader said:

> We have several [districts] that are down at the innovative side, and they are moving forward at a fast clip on reallocation of resources as necessary as a result of their data analysis, in response to what their students need…. But there are some that are still just perceiving this whole system as a "this-too-shall-pass," or a "we'll do it because the law says we have to but it's not anything that we are necessarily embracing as a new era in [the] educational system."

This comment indicates the difficulty of changing to a new approach to school improvement, particularly one that requires a shift in mindset and culture in order to embed continuous improvement into the daily work of the district and schools.

Challenges in Implementing Continuous Improvement in California

Given the wide acknowledgement that continuous improvement is not happening at scale, in the interviews we also asked stakeholders about the key challenges and barriers in implementing continuous improvement from where they sit in the system. Four primary challenges emerged from the interview responses:[37]

1. A lack of clarity on what continuous improvement means in practice and how to get there
2. Insufficient strategies and supports to grow internal capacity for continuous improvement
3. Difficulty prioritizing continuous improvement in a resource-constrained environment
4. Variation in the availability and use of data to support continuous improvement

Lack of clarity on continuous improvement in practice. As discussed previously, for organizations as dynamic and fluid as school systems, it is important to have a clear understanding of what is expected in order to implement continuous improvement practices, and a path for how to get there. This common understanding can promote appropriate changes in adult mindset and behavior and encourage authentic implementation. However, education leaders report there is a lack of clarity concerning what "continuous improvement" means in practice and how to achieve it.

State education policy leaders have attempted to make continuous improvement both an explicit priority and an expectation for districts through the design of the LCAP and the System of Support, and by weaving continuous improvement into the language of the ESSA state plan, among other strategies. Yet, district leaders and those who support them noted that inadequate guidance from the state, in terms of a common definition and effective practices, complicates attempts to implement continuous improvement at their sites. They expressed the need to have a set of expectations as a starting point to initiate continuous improvement that was "coherent" and "meaningful." A COE leader explained, "It would be helpful if we were all using a common framework around continuous improvement. Because then no matter where a district went for support, they were getting the same message." Echoing these sentiments, a state policymaker observed, "There is a tension between providing guidance and allowing local control. But I feel districts need some more specificity… not prescriptive, but with meaningful structure." This lack of clarity in the approach of continuous improvement, and supports around it, raised several key concerns from our stakeholders.

***Surface-level implementation*.** Stakeholders who support school districts reported that districts most often focus on surface-level application of tools or structures rather than engaging in authentic continuous improvement. Almost all districts reported some use of continuous improvement approaches, such as following the principles of Michael Fullan or Anthony Bryk, or engaging in improvement cycles (e.g., Plan-Do-Study-Act). One support provider noted, "I haven't been to a district where they don't already have something in place."

[37] These themes are also addressed in Hough et al. (2017).

However, only a handful of school districts are implementing these approaches deeply within the context of their district or schools. As a different support provider reported, "We found in our work that people say, 'We have continuous improvement happening in our district.' [But] when we visit these districts, conversations on continuous improvement are on the surface level." This is a concern because, as mentioned in Part 1, surface-level implementation can cause people to lose sight of the principles of learning and discovery underpinning a continuous improvement approach (Spears, 2010).

Incoherence in improvement initiatives. Without a clear vision of how to build and maintain a continuous improvement organization, school district leaders report most improvement efforts are currently isolated within a single site or department, contributing to disjointed improvement initiatives rather than coordinated system-wide change**.** Although the application of continuous improvement practices to a single initiative has the potential to serve as a natural path for practitioners to build capacity in continuous improvement, to become a continuously improving organization requires greater understanding of how practices, structures, and systems are integrated (see Part 1 on "Continuous Improvement Organizations" and Spears, 2010; Senge, 2006; Rother, 2009).

While a few districts acknowledged that continuous improvement ideally should occur throughout the organization, "from the classroom to the district office," most improvement efforts are reportedly isolated within one site or department. This suggests that even those districts that are engaged in continuous improvement are likely still in the beginning stages. For example, many districts referred to the establishment of professional learning communities (PLCs) at the school site as an example of successful continuous improvement implementation. However, the work of these PLCs was very rarely connected to broader system goals. As a support provider observed, "It's beyond striking to me…. We have teachers involved in improvement strategies. But they don't know the impact it will have on continuous improvement at the district level." This comment seems to suggest the importance of explicit vertical articulation of the district's continuous improvement approach including the practices and activities designed to integrate continuous improvement into the work of the organization. This kind of early implantation of isolated initiatives can be used to build capacity for system-wide change, but this organizational change strategy needs to be explicit and well managed (Spears, 2010; Senge, 2006; Rother, 2009).

Need for models of best practices in continuous improvement. When asked to recommend next steps for supporting district capacity for continuous improvement, more than half of district leaders suggested dissemination of best practices from other districts comparable to theirs. In fact, there was an overwhelming demand to hear about successful continuous improvement at peer institutions and to learn about exemplars from support providers who work across multiple sites. Echoing this common request, a superintendent stated, "It would be nice to create a repository… a best practice type of manual." Despite the limited number of examples of continuous improvement in practice in education, part of the work of supporting districts on their continuous improvement journey will be to help them see themselves in this work and to see its potential for change.

***Compliance with state structures*.** Despite the LCAP's design as a tool for continuous improvement, education leaders caution the process of LCAP is in danger of becoming a compliance exercise, particularly since there are not good models for how the LCAP process can be used to support authentic continuous improvement. Many districts reported that when the LCAP was first introduced, they believed that the state's revised accountability and support system heralded a major shift from a compliance-based approach to a continuous improvement approach. They recounted how the LCAP was presented as an opportunity to articulate "What's important to us? How do we plan on going about meeting the goals that we have as a district?"

However, some districts soon struggled to use the LCAP as a tool to address these questions for improving outcomes in their schools and districts. The majority of district leaders reported that filling out the LCAP has become a compliance activity, indicating that the process may interfere with authentic continuous improvement. For example, both a district leader and a state leader noted the presence of too many state priorities making school district leaders feel that there is little opportunity to genuinely focus on a few, high-impact strategies. As one district leader stated, "For me, the LCAP does not help us improve as an organization…. It is completely compliance for our counties." Another district leader noted, "The LCAP is aligned philosophically but *not* as a practical continuous improvement tool."

Need for strategies to increase capacity. Education leaders recognize that continuous improvement requires a shift in culture and a change in mindset. It requires the introduction of new systems and structures, and new ways of thinking about and approaching the work. This type of organizational change is no simple task and requires growth in internal capacity across the system. Yet, districts reported few opportunities to learn new strategies for growing capacity to accelerate the institution of continuous improvement practices system-wide. As such, while increasing capacity is a known necessity, strategies and supports to grow capacity are lacking.

District leaders report limited support for continuous improvement implementation. The majority of school district leaders interviewed stated that no outside entity was helping them to implement continuous improvement. Several district leaders simply reported that they are receiving "zero support" for continuous improvement. The other half identified support from the County Office of Education or private support providers. However, most of the support that districts described was not directly related to continuous improvement. Rather, they cited support for district improvement initiatives such as accelerated English language acquisition or standardizing coaching in the district. The support described from their county offices tended to focus on the LCAP. As one district leader said, "We've had some training over the years, but… we've never gone to a workshop entitled 'How To Do Continuous Improvement In Your District.' If it's out there, I haven't heard of it."

Hesitance around single methodology for improvement. Education leaders report reluctance to subscribe to a specific improvement methodology which may complicate efforts to build a coherent approach across systems. At all levels of the system, stakeholders agree that building continuously improving systems requires more than a prescribed tool or methodology.

One district leader discussed how they have resisted prescriptive approaches to continuous improvement:

> We have been very much against purchasing a canned system. We have more of a culture of taking things that we've learned… what we feel are really good ideas, and rework them, remix them into a system that we think we could really support.

Along these lines, a state leader reported that because of differences in district context, they are trying to move away from prescribing specific tools for continuous improvement: "We're also trying to be very agnostic to the kind of tools that we use, or that we promote. So ultimately this is much more about process than about a specific protocol or a tool that we're using." As described in Part 1 of this paper, across the healthcare sector and in Menomonee Falls, leaders have drawn from multiple improvement methodologies in order to drive change in their systems. However, it takes considerable knowledge and skill of continuous improvement to integrate elements from different methodologies, and it has the potential to complicate early efforts to share a clear vision of the improvement process across diverse stakeholders. Furthermore, introduction of multiple improvement methodologies makes it harder to develop a clear training program for staff in different roles. This problem is heightened in California by the fact that each support provider uses a different method and language, leaving districts that are generally new to this work to create coherence on their own across methodologies.

District leaders report that the existing support for continuous improvement is not intensive enough. Districts that are further along in the transition to an improvement organization often work with external support providers, which they reported was essential to building the capacity to improve. As one superintendent said:

> We cannot sustain continuous improvement in a way that we would like to unless we have an entity that… takes over the mechanics and facilitation of that. If you leave it to districts to do [it] themselves, work gets in the way.

Several districts said that available supports, such as from the CCEE or the county offices, were helpful but insufficient. For example:

> [The] county does good in that they'll bring in a speaker on continuous improvement…. But that's not the type of intensity of engagement that you're going to need to build the type of systems that lead to actual continuous improvement within your district.

Education leaders report variation in the capacity of counties to support districts' continuous improvement efforts. The County Offices of Education were often discussed as an essential support for implementing continuous improvement across the state; yet, variation in the capacity of County Offices of Education to provide support to districts was widely referenced, echoing multiple studies of county capacity (Taylor, 2017; Koppich & Humphrey, 2018; Plank, 2018). As one district leader reported, "If [school districts] don't improve, the

county is supposed to provide the expertise and technical assistance and support… in my experience there's a serious capacity issue at the county level that is beyond money." A state leader similarly mentioned the variation in capacity among County Offices of Education: "There are some counties that are [thinking] this 'too shall pass' or they just lack capacity to keep their head above water. And I'm not being disparaging of them. I just think there's [a lack] of capacity." Those who work within the COEs also acknowledge constraints on their ability to meet the needs of all districts. As one COE leader said, "[The districts] rely heavily on us and it's a good thing, but it's also unfortunate that we don't have the people on staff to be able to support the districts within our own county." Acknowledging this need, one state leader said that their work is to consider "how we build capacity in county offices around support."

Districts report staff turnover is undercutting efforts to build system capacity. Education leaders agreed that staff turnover presents myriad difficulties to growing and sustaining continuous improvement system-wide. Among other issues identified, high teacher and leadership turnover makes it extremely difficult for support providers to build relationships, and in turn, to build capacity, with district staff. Moreover, if individual capacity is the key to organizational transformation, turnover presents a substantial challenge to sustaining progress. Along these lines, district leaders overwhelmingly identified difficulty attracting and retaining teachers as a substantial barrier to continuous improvement efforts. For example, one district leader reported:

> The number one issue we have here is staff turnover… the onboarding process, trying to get the teachers up to speed, the training, the extra PD that we have to do, it's a drain on resources and it's a drain on the system.

Another district leader identified their inability to compete on teacher salaries as a barrier to retaining staff: "We're not as competitive in terms of our salary structure. We just don't have those resources… I feel like we're the Oakland A's. People come here, do great work, get trained, and then after four years or so, they leave."

Prioritizing continuous improvement. Continuous improvement requires an investment in doing things differently. Yet, districts struggle to prioritize continuous improvement when facing constraints of time and resources. Many district leaders reported that it is difficult to make such investments in the face of pressure to improve quickly along all dimensions and with limited financial resources.

Even in a mature improvement organization, the process of continuous improvement takes time that districts do not feel they have. When a district is engaging in authentic continuous improvement, they have internalized the improvement adage of "going slow to go fast." This means that the people in districts and schools must take time to develop and implement solutions that are likely to solve specific problems, including testing ideas at a small scale before going to a system-wide roll-out (see Table 1, "Distinguishing Features of a Continuous Improvement Approach" on the work of the front line). This approach ensures

better outcomes, but it can take years.[38] As one superintendent said, "The system is not built to allow time to engage in continuous improvement models, because those require that the teams actually engage in the work, engage in discovery of the learning, and that takes time." With Dashboard data available annually, and with measures reported along several dimensions and for all subgroups, many districts reported feeling like there is an expectation that changes in student outcomes should occur from year to year. However, this rate of change does not feel feasible, and the accountability pressure may limit districts' flexibility in implementing new approaches. As one superintendent stated:

> As long as there's accountability with a hand slap when you don't do well, the system doesn't give you time. Because to try something different means it may not work. And if it doesn't work, you can't have the principal getting pounded because they took a risk.

Accordingly, districts also need the time, flexibility, and support to learn from failure—a key cultural element of a continuous improvement approach (see cultural elements of a continuous improvement culture in Part 1; Lucas & Nacer, 2015; Garvin, Edmonson, & Gino, 2008).

Time and groundwork are needed to boost effective improvement. Districts are not yet mature improvement organizations and they report that they need time to build the culture and systems that lay the groundwork for continuous improvement before they are even ready to engage in the work. A shift to improvement requires a less hierarchical structure in which everyone has ownership over the organizational goals, and where there is clear alignment between departments in the central office and with the work of schools (for example, see description of the School District of Menomonee Falls). Thus, building an improvement culture can require redesigning a district's structure, systems, and processes. As one superintendent mused:

> I think there's a hidden assumption around some of the continuous improvement frameworks that you have some of these systems in place and then here's how to improve those systems, right? What if you don't have any of those systems in place? Then, the first step is building those systems.

For this reason, even after a focused investment in a system to support continuous improvement, it can be a long time before student outcomes begin showing improvement. While most districts are not very far along in building the structures, systems, and culture needed for continuous improvement, even those that are progressing report few changes in measurable outcomes as a result. As one superintendent stated:

> I think that we've successfully shifted this notion around punitive accountability to 'we all are accountable for improvement.'… From where we were to where we are, I'm proud of that… but not proud of our absolute performance. It's still pretty poor.

[38] See descriptions in Part 1 of how numerous improvement efforts developed over time and Imai's focus on "daily learning" to improve practice.

Doing things differently requires investment, but district leaders report resources are restricted in the context of declining revenues and accelerating fixed costs. Many district leaders think LCFF has been communicated to stakeholders as a windfall, when in reality one district leader asserts "the funding barely covers the basic necessities to run an effective school or system," a finding corroborated by other research (Humphrey et al., 2017; Levin et al., 2018). Furthermore, many district leaders are feeling their budgets pinched by declining revenues and the increasing costs of healthcare and pensions (Krausen & Willis, 2018; Levin et al., 2018). The constraints on district resources make it difficult for them to invest in new programs or the supports they need to build capacity internally for continuous improvement. As one district leader said, engaging the in-depth support of a private support provider is very effective but can be expensive:

> If you engage a [private support provider], a three-year continuous improvement contract, that's going to cost you $150,000, $200,000. Honestly, we don't have that type [of money]. If you're asking me would you do that versus having your elementary school kids have access to the arts, I'm going to choose the arts.

Accordingly, in order to learn the work of continuous improvement, districts will need to make continuous improvement a priority, and invest in it. This may require them to free up resources within their system by finding efficiencies or by eliminating programs that are not producing the outcomes they want for their students. However, districts report that they cannot quickly discontinue ineffective programs, both because of the annual cycle of school budgeting, and because of embedded interests. As one superintendent said, "You can't just suddenly say, well next year we're getting rid of that!"

A shifted prioritization diverts resources. With the challenge of funding a new program, district leaders find it difficult to prioritize their attention on embedding a continuous improvement approach within their system, further stretching their thin resources***.*** Despite the fact that state-level policymakers want districts to "focus on two to three things and do them well," many districts report struggling to stay focused on organizational goals and the ability to be strategic about investments, in large part due to pressure from advocacy groups to spend money in particular ways. Some say that this challenge is heightened by the fact that the state's priorities are too broad, making it seem like districts should be working to improve all of the Dashboard outcomes every year, for every subgroup. As one support provider stated, "In a highly resource constrained environment, when you're told to do everything, you will do what is actually most politically expedient for you, not what is necessarily all the time the right thing." A number of stakeholders reported that the districts could have more political cover to focus on strategic initiatives if there was stronger leadership from the state on what to prioritize. As one superintendent stated:

> What could be helped is more focus on what is important to the state. While I don't want any draconian sanctions being placed on us, I would like that backing. So if the legislators said, "This is what is important, this is what we want, and this is what you have to do." It takes a huge burden off of me convincing everybody that this is the right

> thing to do, and it's just best to say, "Hey, it's not my call, we were just the implementers here!"

Along these lines, several stakeholders noted that the LCAP could better support investment in the process of continuous improvement by calling it out. As one support provider noted, "Maybe it would helpful for districts to be asked to articulate the top two or three most important system-wide capacities they aim to develop in order to improve student outcomes each year."

Variation in the availability and use of data. Rather than relying on a summative view as to whether or not a program was effective, the systematic, ongoing collection and analysis of real-time local data allows educators to identify needs and to make immediate adjustments throughout the school year to strengthen efforts to improve educational outcomes for students (Hough, Byun, & Mulfinger, 2018). However, there is variation in the availability and use of timely, relevant data to support continuous improvement.

Dashboard as a baseline resource, while LCAP assists as a forum. Education leaders report the CDE's Dashboard offers a baseline of data for districts and COEs, and the implementation of the LCAP provides a forum for conversations about outcomes. The LCAP and Dashboard offer increased opportunities for districts to review and analyze their data, and these state-provided resources are particularly useful for smaller districts with limited internal research capacity. One county administrator reported that, for one district, the Dashboard data illuminated problems of practice that were previously invisible:

> Just having the Dashboard to point out that, "Hey, you have the lowest indicator overall for math." That one superintendent was very surprised by that, and when we talked a bit more with him, he had not yet adopted materials for the Common Core math. We now have a team out there working with him—it was because of the conversations around the data.

"Post-mortem data" limits engagement. Education leaders from the state and COEs report that the availability of only post-mortem data from the state limits their ability to engage school districts in continuous improvement**.** State assessment data are not recent, leading one district to describe using state data as an "autopsy":

> The state data are great and helps give us a good picture of what happened the year before, but it's really an autopsy. We need to be able to look at the data as the year progresses and get that data into the hands of our sites and our teachers so that they can make adjustments accordingly.

A county office administrator also expressed concern about the lag in data and its impact on districts' abilities to engage in continuous improvement strategies:

> [D]istricts are concerned about the delay in release of the state Dashboard. If the Dashboard's not going to come out until December this year, and that's already halfway through the year… what do we do from July until December, when it comes to looking at strategic planning? Or analysis of progress over time? It's really hard to do that when you don't get data until the year's already halfway over.

One state policymaker acknowledged, "There needs to be a conversation on how we invest in resources to empower districts to use the data they collect and not wait for a Dashboard. There's definitely a hole in our system."

Districts' capacity for data use varies widely. While some districts are developing increasingly robust internal, near-real-time data systems, education leaders report that huge variation remains across districts in their capacity for data use, including generating local data and using data to inform strategy and implementation. County leaders in particular noted the wide variation among districts:

> Our districts are in different phases of having their own data systems where they can produce more timely information that can be used to inform instruction and adjust practices during the year. It just depends on what the district has and can pull forward… I'm not sure that the districts have gotten to a place where they can make really strong use of that data to inform what they do.

As another county education leader said, "I don't know that they all have the structures in place, to use data and understand it and have conversations about it and make plans based on it." This finding echoes other research identifying wide variation in the level of sophistication of different district data systems, as well variation in the capacity of district leaders to use data to inform improvement (Warren & Hough, 2013; Hough, Byun, & Mulfinger, 2018). Sometimes, as one district administrator notes, this can also mean unlearning poor practices and prior assumptions about data use: "I think probably one of the biggest barriers is to help people overcome just un-useful practices."

Conclusion

The recent uptake of continuous improvement as a reform strategy is a positive and important step in improving educational performance across the state. It has succeeded in improving outcomes in other sectors, shown some early promising results in education, and enjoys the support of educators across the state. That said, the use of continuous improvement is still relatively new and far from happening at scale across California. As articulated in interviews with over 40 decision-makers at all levels of the education system in California, there are several key barriers to implementation, including a lack of clarity with regard to what continuous improvement means, what it looks like in practice, and what it takes to build a continuous improvement organization, in addition to resource and time constraints, and conflicting policy messages.

Assuming the creation of continuous improvement organizations is the state's end goal, the question of what role policy should play in promoting the emergence of continuous improvement organizations remains. To our knowledge, there are no industries where continuous improvement organizations have become the de facto way of doing business across an entire state or large system. Because we cannot refer to a "bright spot" from which to draw concrete policy strategies and activities, we will instead highlight three potential approaches to closing the gap between the current use of continuous improvement and the ideal state as well as lessons from the spread of this approach in other industries. We offer these as grist for future conversations as the policy around continuous improvement continues to unfold.

1. Put a Stake in the Ground on the Definition and the Intention

Lack of a clear definition of continuous improvement stems from an insufficient understanding of the key principles and concepts that serve as its foundation. The state's emerging vision for improvement in educational outcomes seems to be a three-legged stool: continuous improvement along with local control and equity. However, the principles that ground the other two legs are much clearer and more widely understood and accepted. This is due to the fact that they were subject to greater scrutiny and conversation across a wide set of stakeholders. As the newest addition to the stool, it is not surprising then that continuous improvement has yet to achieve the same level of clarity. Furthermore, the ideas of continuous improvement are newer to the field of education in general, with fewer examples of successful implementation.

To this end, it could be beneficial for the state to bring together others to create consensus about and define what continuous improvement is and what it should look like in practice. It is important to note, however, that achieving this clarity will require a recognition and understanding that continuous improvement is at its core a management theory and not simply a set of tools or methodologies. This theory is driven by the premise that organizational outcomes are the product of the system as opposed to individual will, motivation, or performance. Given this basis, improving outcomes requires the disciplined efforts of everyone in the system. Furthermore, it requires a focus on leadership and management of organizations, within schools and districts but also within state agencies and support organizations.

2. Focus on Building Local Capacity for Implementation

Adopting a continuous improvement approach statewide requires a fundamental shift in the mindsets, roles, and responsibilities of everyone in the system and how they relate and interact with each other. Most notably, it pushes more of the problem-solving and decision-making to schools and districts, which are responsible for making changes that dramatically change outcomes in their local contexts, where other approaches may have failed. County offices and the state are then tasked with providing them with the necessary supports as opposed to serving primarily as monitors of compliance.

This approach requires everyone in the system to develop new skills and capabilities. As highlighted in the interviews, building these capabilities takes sustained focus and investment over time, which often runs in conflict with enormous policy pressure to achieve improved outcomes virtually overnight. The state could help to navigate these tensions by articulating the skills and capabilities of continuous improvement, and making development on these domains an explicit policy goal. This could involve the development of a more holistic system of measures that tracks both progress towards the development of the necessary organizational capacities to become a continuous improvement organization (leading indicators) as well as progress of student outcomes (lagging indicators). Deeper study of continuous improvement organizations—in education and other industries as well as existing organizational frameworks and rubrics (e.g. Baldrige, IHI) that articulate and measure this developmental trajectory—can serve as the potential starting point for this process. Stronger policy emphasis on the improvement of organizations as the path towards improvement in student outcomes rather than the presence of a tool could also help to communicate this as a valid and worthy goal to various stakeholders.

3. Galvanize the Field by Drawing Attention to the Urgency of Pursuing This Work

Cultivating an environment across the state that supports the uptake of continuous improvement requires all state-level actors—state agencies, advocacy groups, technical assistance providers, districts, and schools—to develop a shared understanding and vision of what a quality educational system looks like and their role in contributing to such a system. Furthermore, because a given school or district gets support from many places on many topics, coordination in approach will help to ensure coherence within and across organizations. One way the state could achieve this coherence is through leading a process that engages various stakeholders in developing the framework for what continuous improvement looks like in practice and how it should be supported. In health care, the power of this process and the resulting report, *Crossing the Quality Chasm: A New Health System for the 21st Century*, which served as a key catalyst of the spread of improvement in healthcare, was that it represented a collective vision of a diverse set of stakeholders in the field—doctors, hospital administrators, insurance companies, philanthropists, etc.—that took shared responsibility for the creation of a new and better health system through the use of continuous improvement. Galvanizing such a cross-section of key stakeholders to lay out a similar vision for a new and better education system in California would hopefully also serve as the critical catalyst necessary to propel the proliferation of continuous improvement organizations across the state. Only with coordinated action across all levels of the education system will continuous improvement be realized at scale in California. The state education agencies can play a critical role in setting this vision, building capacity to achieve it, and building consensus for the path forward.

Appendix A: Continuous Improvement Methodologies

Methodology	Origin	Brief Description
Networked Improvement Communities (NICs) *Bryk et al., 2015; LeMahieu et al., 2017*	In 2008, the Carnegie Foundation for the Advancement of Teaching introduced the idea of a Networked Improvement Community as a way of structuring improvement efforts. The underlying hypothesis was that reinventing the R&D infrastructure in education could spur progress on persistent problems of educational performance.	NICs involve (a) the formation of a *network* of diverse expertise focused on a common aim and (b) the use of *improvement science* to structure the learning of the network. The model provides but does not prescribe particular tools or methodologies. Rather, the approach is defined through the application of *6 core principles of improvement*.
The Improvement Guide *Langley et al., 2009*	The Improvement Guide is a methodological textbook created by the Associates for Process Improvement—a group of quality improvement consultants who worked with Deming and applied his principles in their consulting practice. The methodology is an accumulation of tools and practices developed through the group's work embedding continuous improvement in organizations across multiple sectors. This is the principle methodology used by the Institute for Healthcare Improvement and is broadly applied in NICs.	The methodology provides guidance for structuring improvement efforts and provides an array of commonly used improvement science tools that can be flexibly applied to solve a wide spectrum of problems. The authors' main contribution to the toolset is the Model for Improvement, a tool that can be used to test and spread changes in improvement efforts both big and small. Whereas Lean places more emphasis on analyzing the problem, the Model for Improvement emphasizes rapid, iterative learning through practice.
Lean *Alukal, 2003; LeMahieu et al., 2017*	Lean methodologies are a direct descendant from the work in Toyota and the automobile industry in the latter half of the last century. The specific tools and practices came out of scholars' attempts to distill the keys to Toyota's management system in order to replicate their performance in the United States. Since then, lean methodologies have been used in multiple sectors and are one of the dominant methodologies used today.	Lean methodologies are designed to support team-based problem-solving that delivers more value to the end user. Teams are trained in a range of improvement science tools that are flexibly applied. Lean's signature tool—the A3— structures the cycles of analysis, goal setting, and learning from implementation. Lean methodologies are intended for use in Lean organizations that promote continual learning and problem-solving throughout the organization.
Six Sigma *LeMahieu et al., 2017*	Six Sigma was developed and first practiced at Motorola in 1986 as way of increasing the quality of its products. Since then it has spread to other	Six Sigma relies on the training of select individuals who work exclusively on Six Sigma projects for a period of 3-6 months. Six Sigma projects follow a 5-step DMAIC

	manufacturing organizations and beyond.	process: define, measure, analyze, improve, control. A wide range of improvement science tools are applied throughout these steps. Many of the tools are shared with the Improvement Guide and Lean.
Design-Based Implementation Research (DBIR) *LeMahieu et al., 2017; Means & Harris, 2013*	Design-Based Implementation Research emerged in the early 2000s as a way of supporting improvement through involving a broader range of stakeholders in the research process. The first instantiations of DBIR came about in 2003 as result of the creation of SERP, an organization dedicated to brokering research–practice partnerships to work collaboratively on educational R&D.	DBIR begins with the establishment of a research–practice partnership and the identification of a common interest for R&D. Unlike the other methods, DBIR does not provide specific guidance about how to structure the R&D in these partnerships. Rather it defines itself through a series of four principles, so as to be an umbrella approach that encompasses many specific applications.
Implementation Science *Dalrymple, 2017*	Implementation science emerged out of a need to increase the 'fidelity' of implementation of research ideas as they were put into practice. It is less focused on the improvement of performance and more focused on the adoption, spread, and implementation of specific interventions.	Implementation science efforts typically involve the creation of "extension agents," teams responsible for being the liaison between researchers who developed an intervention and the practitioners engaged in its implementation. These extension agents guide the implementation of interventions through phases of understanding the context, creating an implementation structure, sustaining the implementation structure, and using this learning to inform future applications.
Positive Deviance *LeMahieu et al., 2017*	Positive deviance emerged out of a nutrition project in Vietnam led by Save the Children in which child malnutrition was successfully addressed through identifying positive deviants in the community, understanding their practices, and spreading these to the rest of the community. The group's approach has since been documented and used by other groups to solve seemingly intractable problems.	Positive deviance has six phases: (1) define the problem or outcome, (2) determine common practices related to the outcome, (3) discover uncommon but successful practices, (4) design an action learning initiative based on the findings, (5) measure the progress of the initiative, and (6) disseminate results. Other improvement methodologies (such as Lean, Six Sigma, NICs) integrate a similar approach to learning from positive outliers but do not depend exclusively on this approach for discovering solutions.
Deliverology *Dalrymple, 2017; Barbar, Kihn, &*	Deliverology came out of Prime Minister Tony Blair's government in the early 2000s. Blair commissioned a 'delivery unit' to help execute the	Like implementation science, deliverology assumes that the solutions to problems are known and establishes a delivery team responsible for their implementation.

Moffit, 2011	changes he promised as part of his campaign. The specific methods used by this unit were then codified and spread to other organizations.	Deliverology describes a process of "delivering" that contains five main components. It takes a performance management approach, determining effective actions centrally, and then managing their implementation.

Appendix B. Organizational Frameworks for Continuous Improvement

	High Velocity Edge *Steven Spears*	Quality as a Business Strategy *Associates for Process Improvement*	Baldrige	The Fifth Discipline *Peter Senge*	Coherence *Michael Fullan*
What is being summarized?	CAPABILITIES OF IMPROVEMENT ORGANIZATIONS	ACTIVITIES FOR LEADERS TO FOCUS THE ORGANIZATION ON IMPROVEMENT	CRITERIA FOR IDENTIFYING PERFORMANCE EXCELLENCE	THE DISCIPLINES OF A LEARNING ORGANIZATION	FOUR ESSENTIAL COMPONENTS FOR SUCCESSFUL AND SUSTAINABLE CHANGE
Framework elements	1) Specifying design to capture existing knowledge and building in tests to reveal problems 2) Swarming and solving problems to build new knowledge 3) Sharing new knowledge throughout the organization 4) Leading by developing capabilities 1, 2, 3	1) Establish and communicate the purpose of the organization (mission, vision, values) 2) View the organization as a system (linkages between different parts) 3) Establish a system to obtain information relevant to the need the organization is fulfilling (data processes) 4) Plan for improvement (select improvement priorities) 5) Manage improvement efforts (provide a methodology, provide training and support)	1) Leadership 2) Strategic planning 3) Customer focus 4) Operations focus 5) Measurement, analysis, and knowledge management 6) Results 7) Workforce focus	1) Shared vision 2) Mental models (surfacing and interrogating beliefs, assumptions, and mindsets) 3) Personal mastery (self-awareness) 4) Team learning 5) Systems thinking	1) Focusing direction 2) Securing accountability 3) Cultivating collaborative cultures 4) Deepening learning

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