

Managing for Change:

Achieving Systemic Reform Through the Effective Implementation of Networks for School Improvement

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About the Center for Public Research and Leadership at Columbia University

The Center for Public Research and Leadership (CPRL) at Columbia University strives to revitalize public school systems while reinventing professional education. CPRL conducts high-impact consulting projects for clients in the education sector and provides rigorous coursework, skills training, and real-world experiential learning for our graduate students who attend programs at Columbia University and across the country. Our topical areas of expertise include integration and inclusion, right-to-education legal strategies, formative evaluation and measurement for improvement, and meaningful and authentic teacher and family engagement. Since our founding in 2011, CPRL has provided consulting support to more than 150 state agencies, school districts, charter school organizations, foundations, and advocacy groups, among others.

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The findings and conclusions contained within are those of the authors and do not necessarily reflect positions or policies of the foundation.

Executive Summary

In August 2018, the Bill & Melinda Gates Foundation (“the foundation”) launched its Networks for School Improvement (NSIs) initiative. To further its own continuous learning as well as the learning of its grantees and the educational field, the foundation engaged the Center for Public Research and Leadership (CPRL) to conduct a formative evaluation of the NSIs initiative during its first two years. The research questions that guided this study were:

1. How are network hubs implementing the Network for School Improvement (NSI) strategy?
2. What are the characteristics of effective networks and network hubs?

To answer these questions, CPRL used a qualitative research design to deeply explore the work of nine networks representative of the broader pool of grantees. Selection was designed to ensure diversity with respect to the following characteristics: (a) geographic location, (b) number of schools in the network, (c) number of districts in the network, (d) grade band targeted, and (e) problem of practice. The findings presented in this paper emerge from an analysis of data collected from these networks across two years. In total, CPRL conducted over 160 interviews, observed 22 network convenings, and analyzed nearly 1,000 artifacts and documents.

CPRL developed a hypothesis about NSI management and implementation based on extant literature and used the major categories of activities articulated therein to identify emergent patterns across the sample in these core network activities. Using the same hypothesis, CPRL developed qualitative indicators of early network success to determine which networks were most effectively implementing the NSI strategy and accelerating the pace of change, including: (1) strengthened adult mindsets and practices, (2) spread of effective change ideas, and (3) student-level learning and educational achievement

Findings

Though all networks in the sample implemented activities that were mostly consistent with those outlined in the extant literature on NSIs, there was significant variation in the structure and rigor with which each network approached this work. Importantly, many networks in the sample lacked the appropriate rigor and alignment in inquiry testing to produce reliably powerful interventions and codify them for effective spread and scale.

Two network hubs, however, rigorously implemented the activities outlined in the literature and performed well against the theory of action and the following early indicators of success: (a) strengthened adult mindsets and practices, (b) spread of effective change ideas, and (c) student-level learning and educational achievement. In both cases, the NSI hubs used a management approach that positions the hub as an active participant in the network and targets four key drivers of effective network management:

1. using CI principles and methods to guide an ongoing NSI management-improvement process that draws from and feeds into the problem of practice improvement work;
2. developing strong network routines and norms to spur cross-team problem-solving and collaboration;
3. designing systems that allow the NSI to rigorously test, vet, and codify effective change ideas; and
4. meaningfully integrating systems-level actors into the network to accelerate spread and systems change.

These high-performing networks appear to be better positioned than others in the sample to improve system-wide outcomes for Black, Latinx, and low-income students.

Revised Theory of Network Management

Based on these findings, CPRL proposes a refinement of the literature’s hypothesis on how hubs should optimally manage NSIs to produce systems-level improvements. CPRL finds that rigorous, hub-level continuous improvement (CI) practice and the meaningful integration of system-level actors are all foundational to the successful implementation of an NSI. The figure below captures a visualization of this theory.

Figure 1. Revised Theory of Network Management

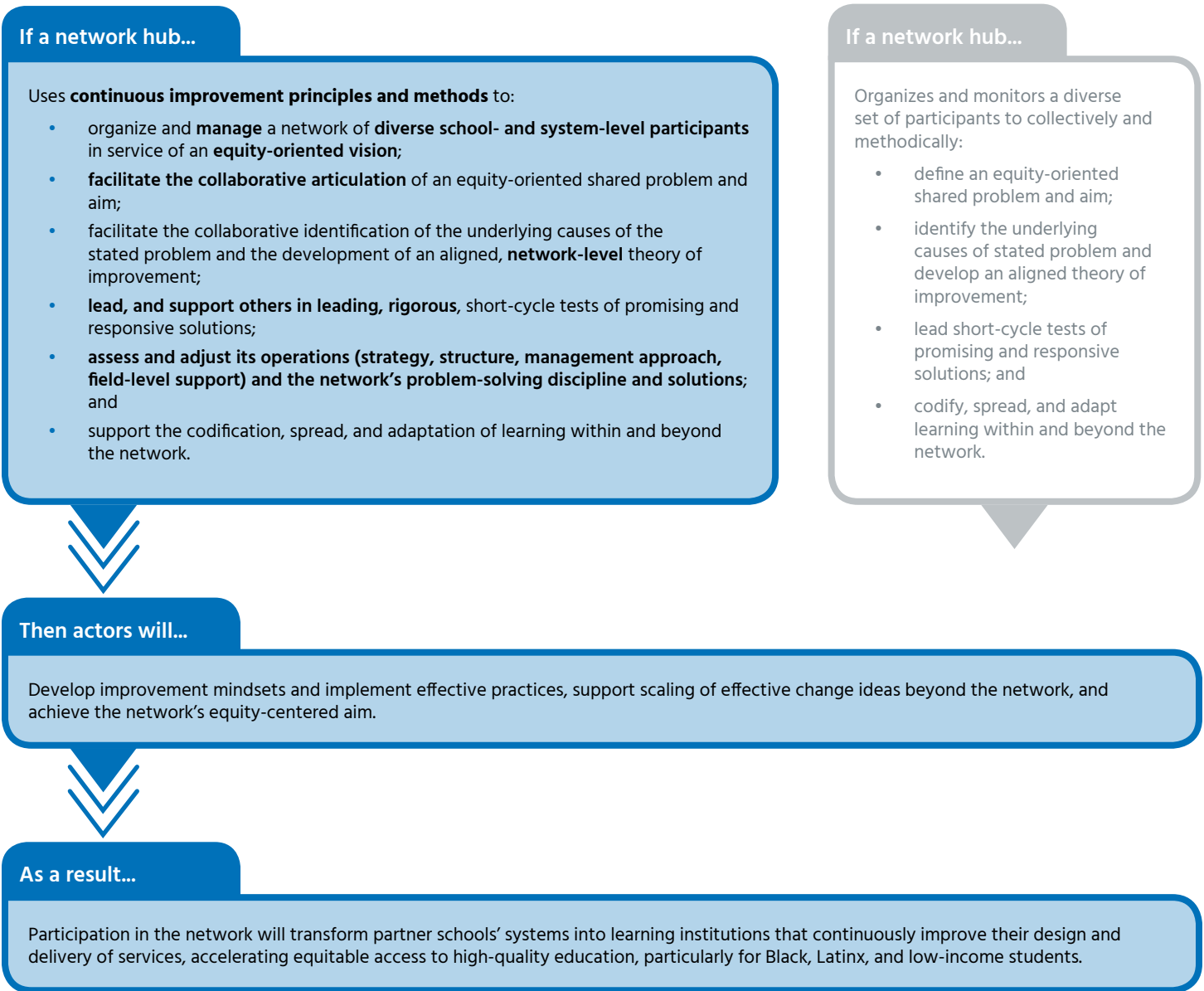


Figure 1 juxtaposes the field’s hypothesis on network management with CPRL’s proposed revisions. CPRL’s changes are highlighted in bold in the left-hand box; the field hypothesis is provided for reference in the gray box on the right.

Implications

Based on the findings from this study and the revised NSI Theory of Network Management, the following recommendations provide guidance to hubs and the foundation as it helps each network reach its full potential.

Recommendations for hubs

- Articulate the hub’s management strategy in the network’s theory of improvement, accounting for its role in the network’s long-term success.
- Articulate explicit equity drivers in the network’s theory of improvement and rigorously examine which change ideas best serve the most marginalized students.
- Draw on the core principles of CI to continually assess and adjust their own approach to network-management strategy.
- Leverage expertise across the network and, as needed, build the capacity of network participants so they are empowered to lead the improvement work.
- Engage district actors to help align network and district priorities, provide resources, conduct their own district-level inquiry work, and develop an improvement-conducive culture in the district.
- Implement meaningful and consistent routines that prompt cross-team collaboration in order to maximize and accelerate learning across the network.
- Ensure all phases of the PDSA¹ are carried out, with particular emphasis on the Study and Act phases, to produce effective, well-vetted change ideas.

Recommendations for the foundation

The findings in this report suggest a number of recommendations for the foundation that would improve network management, accelerate outcomes, and increase the potential of all NSIs to achieve their ambitious outcomes.

- Encourage and support hubs in developing and continually refining self-reflection routines based on the rigorous improvement methodology they facilitate in their own networks.
- Prioritize equity as a driver of change and help networks apply an equity lens to their theories of improvement and measurement practices.
- Ensure that networks are engaging district actors meaningfully alongside school teams to affect sustained systems-level change.
- Match grant timeline, resources, and expectations to the type of change being pursued.
- Monitor network implementation as well as outcomes, including (a) changes in adult practices and mindsets; (b) the spread of effective change ideas; (c) the integration of systems-level actors into the improvement work; (d) the presence of processes to rigorously test, vet, and codify effective change ideas; (e) the presence of explicit routines and norms to encourage collaboration; and (f) the presence of hub-level improvement cycles.

¹ PDSA is shorthand for the four stages in a cycle of inquiry: plan the test, do the test, study or examine the outcomes of the test, and act or make decisions based on what is learned (Bryk et al., 2013).

Introduction

In the United States, ensuring equitable educational opportunities for all students, regardless of race and class, remains a welter of “wicked problems” (Rittel & Webber, 1984; Weber & Khademian, 2008) despite decades of reform at the local, state, and national levels. Recognizing that no single educator, school, or organization can meet such challenges on its own, education researchers and practitioners have identified improvement networks as a promising new strategy to address complex and persistent educational problems (Bryk, Gomez, Grunow, & LeMahieu, 2015; Russell et al., 2017). By coordinating the activity of diverse actors and institutions in service of a shared goal, networks can more quickly identify, produce, and proliferate changes that address the roots of stubborn educational inequities (Bryk et al., 2013; Park, Hironaka, Carver, & Nordstrum, 2013).

Aware of the promise of improvement networks, the foundation launched its NSIs initiative in August 2018. Through this initiative, the foundation invests in middle and high school improvement networks—30 to date—that use CI methodologies to improve postsecondary outcomes for Black, Latinx, and low-income students and in the process design and test solutions to systemic problems that contribute to race- and class-based educational opportunity gaps.

Simultaneously with the creation of the NSIs initiative, the foundation engaged CPRL to conduct a formative evaluation of the initiative, the largest conducted on networks to date, with a focus on two primary research questions:

1. How are network hubs implementing the NSI strategy?
2. What are the characteristics of effective networks and network hubs?

This report² concludes a two-year investigation of the early stages of NSI implementation for nine anonymous networks in the foundation’s portfolio. It presents an aggregate analysis of the NSI approach that identifies patterns of implementation across the sample and characteristics of networks showing the most promise.

CPRL found that all networks are generally implementing their work in a way that is consistent with extant literature on NSIs. Network hubs (“hubs”), the command centers of networks, focus their efforts on organizing and facilitating participant teams’ engagement in rigorous CI processes. Two network hubs, however, do this and much more. In doing so, they outperform the others in the sample on achieving predictive outcomes of long-term network success.

These high-performing hubs organize and manage their network in ways that set them on a path to fulfill the promise of improving system-wide outcomes for Black, Latinx, and low-income students. They share a common management approach that positions the hub as an active participant in the network. These hubs animate four key drivers of effective network management: (a) using CI principles and methods to guide an ongoing NSI management improvement process that draws from and feeds into the problem of practice improvement work; (b) developing strong network routines and norms to spur cross-team problem-solving and collaboration; (c) designing systems that allow the NSI to rigorously test, vet, and codify effective change ideas; and (d) meaningfully integrating systems-level actors into the network to accelerate spread and systems change.

The report’s first section provides background on the NSI strategy, the study’s theoretical underpinnings,

² This report concludes a set of three reports submitted to the foundation about the NSI strategy. The first, a comprehensive literature review of school network improvement strategies, contributed to the theoretical framing of this study. The second provided a descriptive analysis of the initiation phase of the networks in CPRL’s sample.

its analytic framework, and its research methodology. The second section provides a description of the networks' efforts to date, exploring the technical work of networks that has been the focus of previous studies. The third section presents an assessment of the actions that hubs should undertake for their networks to achieve ambitious equity-centered goals. The report culminates with an updated NSI Theory of Network Management and recommendations for hubs and for the foundation.



Background and methods

Networks for School Improvement

An NSI is a group of individuals, school teams, and organizations that self-consciously coordinate their learning and work around a common mission to solve a complex problem (“problem of practice”) affecting student learning or related outcomes (Barletta et al., 2018). NSI advocates argue that user-designed, collaborative, evidence-based, and dynamic change efforts of this sort can more quickly and effectively generate and spread solutions to complex educational problems than the approaches historically used in the U.S. education system (Bryk et al., 2013). Central to this framework for coordinated, substantive work is the identification of a problem of practice and aim statement, investigation of the root causes of the problem, development and testing of solutions, continual collection of data to guide and assess the impact of and iterate on interventions, and ultimately the spread and customization to other contexts of promising solutions within and beyond the network.

To initiate this work and arrive at solutions, NSIs draw on the expertise and influence of a variety of essential actors, including field-level practitioners (e.g., teachers, counselors), school and district leaders, and other system stakeholders, ideally including students and families. Each of these actors plays a critical role, though not always a directly participatory one, in the enactment of network activity. In most network models, participating schools construct a cross-sectional team (“school team”) of practitioners and school leaders to carry out core tasks, including the implementation and testing of interventions. These teams draw ancillary resources and support from school and district leaders who may or may not be direct participants in the network. This activity is coordinated by the hub, the central organization responsible for connecting and facilitating a set of diverse stakeholders to develop and scale localized

solutions to advance toward a shared aim. The hub may be an intermediary organization, a school district, or a coalition of partner organizations. If they work in concert, these actors can contribute to sustainable classroom-, school-, and systems-level change (Barletta et al., 2018).

Figure 2. Portrayal of NSI work based on extant literature

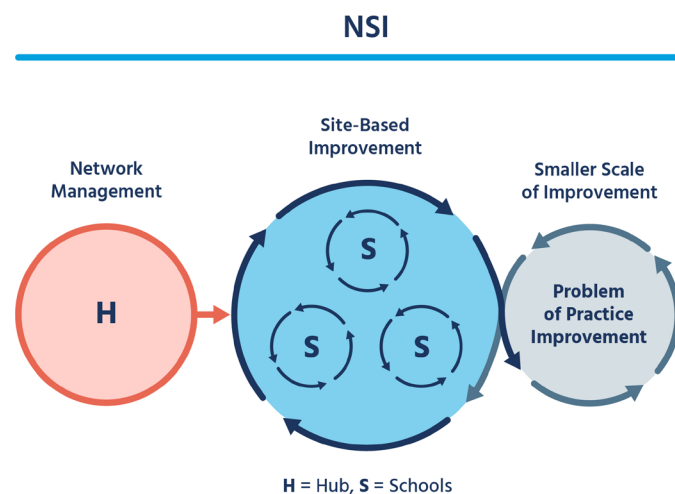


Figure 2 depicts what is in the extant literature about the hub’s role in effectively managing NSIs to achieve its intended impact.

NSI success is predicated on a number of key factors (Barletta et al., 2018), including (a) NSI secure funding at launch that remains stable even if their activities do not demonstrate immediate student outcome improvements; (b) all relevant network participants, including school district leaders and non-school-based stakeholders, need to be fully involved early on and work together to establish a clear goal and problem of practice that is highly relevant to schools’ needs and contexts; (c) network participants must have relational trust and feel comfortable acknowledging challenges and accepting the benefit of one another’s expertise; (d) cycles of experimentation that network participants conduct must be supported by strong data infrastructure for assessing causal processes and outcomes; and (e) supportive and

distributed leadership structures to facilitate shared decision-making processes, including among diverse participants from a variety of school roles to expand the sets of skills and experiences in the network, which together help solve complex problems.

NSIs radically depart from traditional change efforts in three critical ways:

1. In traditional bureaucratic initiatives, central experts develop standardized interventions that practitioners are expected to enact with fidelity, with little consideration for differing school and student contexts. In contrast, the NSI strategy recognizes that conditions are different in each context so that silver bullet solutions will often fail in the aggregate even if they are successful in some instances. NSIs instead collectively generate a common understanding of the problem at issue, how it manifests within local contexts, and what they expect success in solving it to look like. Then they empower field-level professionals closest to the problem³ to use their essential contextual knowledge of the issue to develop and implement localized solutions in their own classrooms, schools, and districts. By sharing the fruits of those experiments, the actors refine their shared understanding of the problem, develop more realistic expectations for success, enhance one another's tools and strategies for addressing the problem locally, identify aspects of the problem for which more generalized solutions may be appropriate, and in all those ways proliferate opportunities to learn about and improve student outcomes.
2. Historically, data have been used to hold educators accountable for student outcomes. Data use is common on the administrative level, where

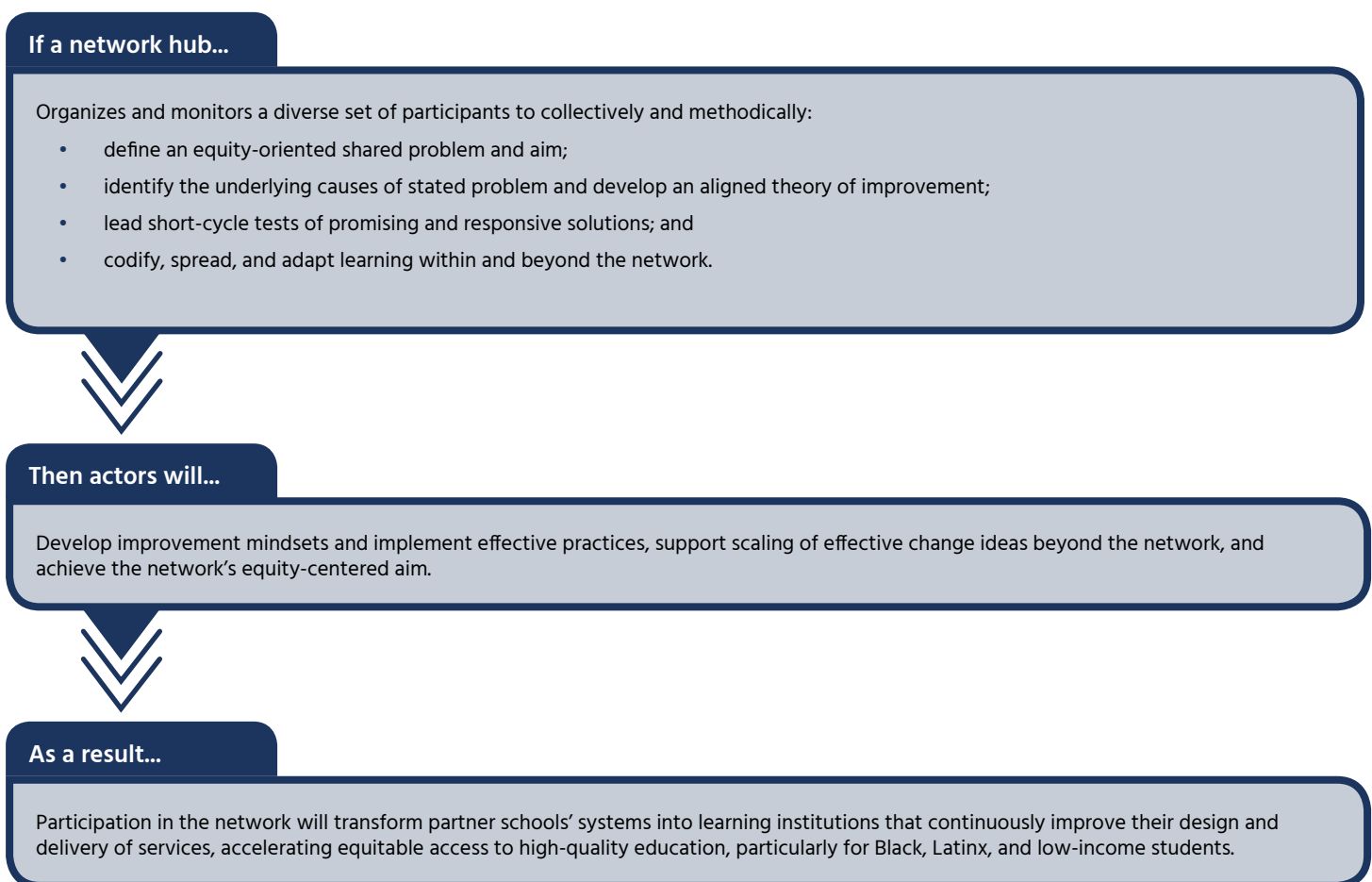
school and district leaders use summative outcome data to gauge classroom efficacy. While many field-level practitioners leverage data for other reasons (e.g., formative assessment of student understanding), a powerful accountability-driven infrastructure and culture still define how data are used in most schools and districts. On the contrary, NSIs focus on the use of formative process and outcome data to enable school and district staff to evaluate and continuously improve their practice and the systems that shape it. These educators methodically collect and use qualitative and quantitative data to identify the root cause of problems and to develop, rapidly test, and iterate on contextually appropriate and, therefore, more effective solutions (Bryk et al., 2013; Russell et al., 2019). Using data becomes a learning and improvement tool for educators to deliver more reliable outcomes than intuition.

3. Lastly, traditional education reforms often confine change to revising the specified roles of a single category of actor or practice. By facilitating meaningful collaboration among actors from diverse spheres of influence within and across schools, districts, and other institutional structures, improvement networks are able to build an understanding of problems and solutions from a systems standpoint and more quickly spread information about locally effective strategies (Bryk et al., 2013). This perspective enables networks to surface, to tackle and address underlying causes that give rise to observed challenges, and to design solutions that approach problems from multiple angles and that fit well within each specified context.

³ In some iterations of networked improvement, students and families are also included in decision-making.

In summary, networked improvement approaches are a notable strategic departure from traditional bureaucratic reforms (Barletta et al., 2018). To be sure, elements of networked improvement strategies are familiar to other improvement methodologies, including data-driven decision-making (Ikemoto & Marsh, 2007) and professional learning communities (Wallenstein, 2018). What distinguishes networked improvement from these other approaches is the development and management of a highly structured social infrastructure of diverse actors and a methodical framework (Russell et al., 2019) that enables collective learning to occur in a more rigorous and efficient fashion. Figure 3 summarizes the existing literature into an NSI Theory of Network Management that articulates the core behaviors that hubs and networks enact and the short-, medium-, and long-term outcomes of this approach.

Figure 3. NSI Theory of Network Management



The foundation's NSIs initiative

The foundation has invested heavily in an education portfolio aimed at providing Black, Latinx, and low-income students equal access to quality education. In August 2018, the foundation launched its NSIs initiative, an investment that seeks to increase the number of Black, Latinx, and low-income students who earn a high school diploma, enroll in a postsecondary institution, and are on track in their first year of attending a post-secondary institution to earn a credential with labor-market value.

Through this initiative, the foundation funds intermediaries and school districts that organize networks of secondary schools around CI methodologies that practitioners use to develop, test, and scale localized solutions to problems of practice. This strategy intentionally diverges from historical one-size-fits-all reform approaches, and instead calls on frontline practitioners and administrative leaders to collaboratively define, produce, and scale solutions that are well suited to their own communities (Gates Foundation, 2019). The foundation sought to fund networks organized by high-performing hubs that could not only execute the technical work of NSIs (see Figure 3) but also model effective change management for participating schools and districts.

To support its own continuous learning and that of the field and its grantees, the foundation engaged CPRL to conduct a formative evaluation of the NSIs initiative during its first two years. The purpose of CPRL's formative evaluation is to identify the conditions and practices of hub organizations that are effectively implementing the initiative, in order to help the foundation and the field improve college access and success outcomes.

Methods and analytic approach

The goal of this study is to formatively evaluate a set of networks in the foundation's NSI portfolio to understand how the NSI strategy was implemented across networks and to determine the characteristics of effective NSIs. To do that, CPRL asked and answered two overarching research questions:

1. How are network hubs implementing the NSI strategy?
2. What are the characteristics of effective networks and network hubs?

To answer these research questions, CPRL first reviewed the literature to establish the theoretical underpinnings of the reform strategy (see pp. 5–7) and to develop indicators of success for use in the formative evaluation (see p. 11). This systematic review (Barletta et al., 2018) resulted from an analysis of existing research on education improvement networks identified through online databases, relevant citations, and interviews with key experts in the field of professional networks and learning. CPRL identified, evaluated, and presented findings drawn from 80 sources that discuss frameworks and hypotheses regarding education improvement networks and 34 sources that present empirical evidence on network implementation or results.

CPRL used its findings from the systematic review to generate a preliminary NSI Theory of Network Management that captured the logic of school improvement networks (see Figure 3). This served as the basis for CPRL's formative evaluation, with the expectation that CPRL's empirical findings would generate new knowledge and result in an updated theory of how NSIs work. Given the networks' experimental nature, huge variations in network capacity,

and the anticipated lag between network launch and demonstrable student outcome gains, CPRL designed a qualitative study that would capture rich and contextualized implementation information and evidence of early success.

CPRL worked with the foundation to use a stratified random sampling approach to recruit a sample of nine networks that were representative of the broader pool of grantees and that would provide insight into the range of management approaches that hubs used. Selection was designed to ensure diversity with respect to the following characteristics: (a) geographic location, (b) number of schools in the network, (c) number of districts in the network, (d) grade band targeted, and (e) problem of practice. Under the guidance of the foundation, study participants were assured that this final report would present aggregate findings and would protect their identity to the extent possible given the unique nature of each network’s efforts. Table 1 presents an overview of sample networks.

Table 1. Characteristics of NSIs in CPRL Sample

Grade Band	7 high school	2 middle school	
Number of Districts	3 multidistrict	6 single district	
Type of Problem of Practice	3 instructional	3 non-instructional	3 hybrid (combination of instructional and non-instructional)
Number of Schools	3 networks include more than 20 schools	6 networks include 10 to 20 schools	
Geographic Location	1 multistate	2 statewide	6 single city
Network Maturity⁴	3 mature	6 new	
Hub Composition	3 district	5 intermediary organizations	1 hybrid (district or intermediary partnership)

⁴ Networks defined as “mature” had been operational before receiving funding through the foundation’s NSIs initiative.

CPRL used the preliminary NSI Theory of Network Management to guide its data collection. Over two years, CPRL gathered data on how each network hub:

1. Identified and recruited participants;
2. Structured network relationships, activity, communication, and spread of knowledge;
3. Engaged network participants to create an equity-centered theory of improvement—including a focus on improving outcomes for Black, Latinx, and/or low-income students, a problem statement, and strategic drivers of success;
4. Developed network participants’ improvement capacities and supported school-based teams in leading cycles of inquiry to test locally relevant solutions;
5. Monitored network function and health; and
6. Codified, spread, and adapted learning from inquiry cycles within and across schools and the network.

CPRL also identified a set of predictive success indicators grounded in extant literature and mapped directly to early outcomes in the NSI Theory of Management. Because the formative evaluation was designed to conclude before networks would achieve their aims, and established data-sharing agreements between foundation support partners limited access to quantitative student and network performance data, CPRL employed the following qualitative success indicators to determine which networks were effectively implementing and practicing improvement while accelerating the pace of change:

- 1. Strengthening adult mindsets and practices.** CPRL measured the extent to which network participants displayed improvements in the beliefs, attitudes, and skills needed to (a) solve the identified problem of practice and achieve the network's equity-centered aim, and (b) engage in CI methodology.
- 2. Spreading effective change ideas.** CPRL measured the extent to which change ideas that proved locally effective were codified and taken up for testing, adaptation, and sustained implementation in settings beyond local testing teams.
- 3. Student-level learning and educational achievement.** CPRL assessed the extent to which each network achieved student-level learning and educational targets, which were aligned with and reflected sufficient ambition given their network aim and were validated by the foundation.

The findings presented in this paper result from an analysis of data collected across Years 1 and 2 of the NSIs initiative. As shown in Table 2, CPRL conducted over 160 interviews, observed 22 network convenings, and analyzed nearly 1,000 artifacts and documents.

In Year 1 (2018–2019 academic year), data collection focused on Research Question 1 and, accordingly, the six implementation areas described above. CPRL collected network documents and artifacts, observed network events, and conducted interviews with hub staff. CPRL's Year 1 findings are summarized in *Networks for School Improvement Formative Evaluation Year 1 Analysis*.

In Year 2 (2019–2020 academic year), data collection focused on both research questions and, accordingly, all implementation and outcome indicators.⁵ CPRL collected network-level documents and artifacts, observed network events, and conducted hub-level interviews. CPRL also collected school-level documents and artifacts and conducted school-level interviews. To identify school-level study participants, CPRL asked each hub to recommend the highest-performing school teams in their networks to participate in data collection. Hub leaders in each network defined highest performing with respect to their own success indicators, which in most cases, were measures of participant engagement. In two networks, hub leaders selected schools based on progress toward school-level targets. CPRL conducted in-depth interviews with identified school leaders, school-team members, and district staff.

⁵ Eight networks were recruited in Year 1 (2018–2019 academic year) of the formative evaluation. One additional network launched and was recruited to the study at the beginning of Year 2 (2019–2020 academic year). Data collection for this network was conducted using the Year 1 research design and protocols. As a result, throughout this report, analysis specific to Year 2 activities includes only the Year 1 study cohort of eight networks.

Table 2: Data Sources and Purpose

Data Type	Details	Purpose
Interviews	167 interviews of hub members engaged in the design and implementation of the network (e.g., coaches and project leads), school team members, school leaders, and district office members most closely connected to the NSI's work.	To understand network actors' roles; experiences; understanding of core network concepts, including improvement methodology and the problem of practice; and perceived outcomes of the implementation of the NSI strategy.
Observations	22 observations of network convenings and meetings, totaling 27 days across nine networks.	To understand group and interpersonal interactions in the network context, implementation of the network design, and observe behaviors of network participants.
Network Documents	Over 950 artifacts, including requests for proposals, hub organizational documents, network planning documents, materials distributed by the hub to network participants, and artifacts related to the improvement work of school teams.	To understand the goals of each network, prior experience and expertise of the hub, network design intentions, and the resources that network actors used to conduct the improvement work.
Data from other data-collection partners	30 documents and artifacts including foundation-facing grantee check-in reports and results trackers, Double Line's data assessments, and PNI's Network Health Survey items and Year 1 summary report.	To understand the network's progress toward targets, health outcomes, and initial data capacity.

To respond to Research Question 1, CPRL defined a set of codes aligned to implementation indicators, coded all collected data, analyzed coded data, and identified descriptive themes, trends, and notable outliers. Particular attention was paid to identifying trends in district involvement; differences in change ideas; the role of diversity, equity, and inclusion; and the level of engagement of participants in testing cycles. The resulting descriptive findings of network implementation can be found in Section II.

To respond to Research Question 2, CPRL defined and applied to all collected data a set of codes aligned to the three aforementioned success indicators (see p. 16). CPRL analyzed coded data by network and then conducted cross-network comparisons to evaluate the extent to which each network demonstrated success. CPRL then reanalyzed collected implementation data to determine which implementation strategies gave rise to early successes. In its reanalysis of the data, CPRL added and applied implementation codes

related to the hub's management approach and to the role of the district in affecting systems change. Using networks mapped with partial success as comparisons, CPRL determined which strategies mattered most and which were missing in the less successful networks. The resulting evaluative findings explaining network success can be found in Section III, and the updated NSI Theory of Network Management reflecting these findings can be found in Section IV.



How hubs are implementing the NSI strategy

Descriptive analysis of process indicators reveals that, by and large, the nine NSIs in the sample implemented the core actions identified in the NSI Theory of Network Management (see Figure 3). In all cases, the network hub:

1. Set up a network structure to organize participant relationships.
2. Recruited participants from multiple levels of hierarchy within the school systems to participate in the work.
3. Coordinated participants to define a network-wide theory of improvement, including an aim focused on improving outcomes for Black, Latinx, and low-income students and drivers that facilitate achievement of the aim.
4. Developed participants' CI capacities and supported school-based teams in leading cycles of inquiry to test locally relevant solutions. In all cases, these cycles of inquiry involved:
 - defining concrete change ideas, or potential solutions, to identified challenges;
 - designing an appropriately scaled test to determine if a change idea works as planned;
 - making predictions about the results of the test;
 - implementing the test; and
 - collecting data to determine if the predictions were correct and the change idea worked as planned.
5. Monitored network function and health.

Fewer networks implemented the final stage of continuous improvement methodology. Two years into the initiative, fewer than half of the hubs coordinated the codification of promising solutions, and only two networks systematized the spread and adaptation of promising solutions within and across the boundaries of schools and the network.

Describing the work of the NSIs at this level of detail, however, reveals tremendous variability and richness in implementation of their work. Because the NSI reform is defined broadly, each hub has much flexibility in customizing its strategy to fit the precise conditions in which its network operates. As a result, a more detailed elaboration of how these core actions played out in practice is warranted.

Enacting network structure

Among the early decisions hubs made was determining how to structure the network to create the desired relationships between and among network participants and the hub. NSIs are typically organized in one of three structures: hub-and-spoke, spiderweb, or cascade (Barletta et al., 2018; Wohlstetter, Houston, & Buck, 2014).

- **Hub-and-spoke** networks are typified by a strong relationship between the hub and participants and very little meaningful interaction among participants.
- **Spiderweb** networks are typified by strong relationships and meaningful interaction between network participants and the hub.
- **Cascade** networks feature a strong relationship between the hub and a select group of participants, who then filter learnings to more peripheral network members.

By the second year of NSI implementation,⁶ just two sample networks were organized in a hub-and-spoke style. In those NSIs, the hub intentionally built the strongest lines of communication between themselves and schools. Six networks aspired to enact a spiderweb structure, but only three networks ($n=3$) established routines that nurtured ubiquitous, consistent cross-team connections. In these networks, the hubs set clear structures and routines for actors to regularly partner during testing cycles, and meaningful cross-team collaboration was a core element of culture and practice. Hubs in these networks curated inter-school relationships to ensure that they would be productive. The hubs set (a) clear expectations for a baseline communication cadence between teams (e.g., biweekly cross-team touchpoint meetings) and (b) a loose protocol for collaboration.

⁶ One network is excluded from this analysis because CPRL observed only its initiation year.

This is not to say that participants in other networks did not have some cross-team touch points. In fact, all networks ($n=9$) offered teams some opportunities to connect and share learnings, typically at NSI events. However, in networks without explicit or consistent routines or structures to connect

participants, interactions were not regular or curated enough to feel useful to participants. For example, several networks ($n=3$) set up social-media-esque platforms to encourage cross-team communication and knowledge sharing outside network events, but they did not establish explicit expectations or routines around how these platforms would be used. As a result, participants did not consistently use or find collaborative value in the platforms.

Participation of actors from all system levels in CI work

All networks include, in some capacity, hub members, student-facing faculty (e.g., counselors, teachers, teacher leaders, coaches), school leaders, and district actors. Only one network formally included students as network members. In all cases, student-facing faculty were actively involved in each stage of the CI process. The degree to which school leaders and district actors meaningfully participated in CI work varied somewhat across the sample.



We really wanted to work on connecting schools to each other, building that sense of [network] identity, like ‘I’m learning not just from the hub, but I’m learning from the other people in the network.’
-hub staff

Student-facing faculty

In all networks ($n=9$), student-facing faculty (e.g., counselors, teachers, teacher leaders, coaches) have been substantially involved in network- and site-based improvement work and, in most cases ($n=7$), have been organized in team structures to encourage regular site-based collaboration. This is a notable departure from traditional educational change efforts, in which practitioner voice has often been excluded from the solution development process (Bryk et al., 2013).

Additionally, NSIs have created a new school-based role—the school-based network leader—to help facilitate the day-to-day work of the network. Nearly all ($n=8$) hubs use this role to allow school teams to take ownership of the improvement methodology during the time between network convenings and lessen the burden on hub coaches. These leaders typically have assigned responsibilities that include communicating regularly with hub staff, building the capacity of other educators in the building, monitoring and facilitating the improvement process, and tracking data. The individual who occupies the role differs from network to network and may be a lead counselor, a teacher leader, an assistant principal, or a principal. While these roles appear to be critical in facilitating the improvement process, only four networks have provided school-based network leaders with training, additional compensation, or reduction in other tasks to accommodate their new network responsibility.

School leaders

In the sample, the role is much more varied across networks for school leaders (e.g., principals, assistant principals, deans) than for practitioners. Though most networks ($n=8$) ask that school leaders participate in the network in some way (e.g., interfacing with the hub to ensure alignment of priorities, mitigating obstacles for school teams), only five networks

have structured network activity to let school leaders participate in CI work alongside participants. In these networks, school leaders are integrated into teams and regularly help organize their activity, uncover root causes, investigate drivers, plan interventions, and assess impact alongside practitioners. Because participation in inquiry work requires a significant time investment, the five networks that have successfully integrated leaders into the inquiry work have allowed some flexibility in how school leaders participate. Three of these networks, for example, have specifically asked that assistant principals or other leadership team members who have influence on school policy be the primary day-to-day leadership representatives on teams instead of principals.

District

In all networks ($n=9$), districts provide resources—including funding, data access, and space—to ensure that school-level participants are able to engage in improvement work. In most networks, districts ($n=5$) stay updated on the activities of the network in an observational capacity. These district actors attend network convenings or participate in regular check-in calls with the hub to stay abreast of the progress, changes, and needs of the network, while also monitoring for opportunities to scale best practices related to the problem of practice. Only three networks have designed network structures in which district actors are involved enough with site-based CI work to contribute to collaborative learning and problem-solving on a shared problem of practice alongside practitioners and school leaders.

Students

Only one network has formally included students as members of the NSI. In that network, about two-thirds of school-level teams include at least one student representative who attends convenings and enacts separate but analogous change projects at

their school. One other network invited representative students to attend convenings and give input on proposed change ideas. When most networks ($n=7$) incorporate student voice in CI work, they do so primarily through indirect activities, like empathy interviews during root-cause analysis and inquiry cycle data collection.

Development of a network-wide theory of improvement

All networks articulated a problem of practice. Networks' chosen problems of practice could be categorized as instructional ($n=3$), non-instructional ($n=3$), or a hybrid of both ($n=3$).

Networks then created theories of improvement (represented in driver diagrams or theories of action) to identify the levers of change that must be acted upon to solve the problem of practice and achieve the shared aim. These theories of improvement allow the network to “see the system” and understand which levers are within and outside the immediate control of those closest to the problem (Bryk et al., 2013). Sample networks' theories of improvement range widely in complexity and comprehensiveness. One network, for instance, chose to narrowly focus on two drivers that are directly within the teachers' locus of control, while another network, focused on the same instructional content and grade band, created a more comprehensive driver diagram—with four primary drivers and 19 secondary drivers—that was fully inclusive of school-level dependencies, including student agency and school leadership.

The theories of improvement also vary by the types of changes they seek to enact. CPRL examined the types of changes found in the networks' driver diagrams using the typology of changes outlined by Anderson and Ackerman Anderson (2001): (a) developmental changes improve existing aspects of an

organization or allow enhancements of systems the organization already has, (b) transitional changes are more radical changes that replace an existing system or process with another, (c) and transformational changes require a complete restructuring of an organization or system. In the sample, three networks are pursuing solely developmental changes, four networks are pursuing solely transitional changes, and one network is pursuing a combination of developmental and transitional changes. No networks in the sample are pursuing transformational changes.

Networks' perceived rate of progress varied by the type of problem of practice undertaken and by the type of change pursued. Those that focused on instructional problems of practice perceived a slower rate of progress toward network aims than those pursuing non-instructional (i.e., college access) or hybrid problems of practice. In addition, the three networks that perceive slower progress were those that addressed the chosen problem with transitional drivers of change. This is not surprising, because more complex changes require more time and effort to resolve.

Finally, participants were involved in the creation of their network theory of improvement, but in most networks participants rarely engaged the theory of improvement once they initiated cycles of inquiry. Only three



We actually got some direct feedback that the driver diagram is a helpful tool to think about how to approach this work, but I feel like it's still—I'm not sure that teams would say they 100% feel like it's theirs, that they've internalized it and they've owned it.

-hub staff

networks actively used the theory of improvement to connect school-level changes to the larger system. These networks consistently referred to the driver diagram at network convenings and explicitly identified how change ideas connected to the theory of improvement. They also continually refined the theory of improvement based on insights and findings from school-level tests.

Support participants in leading cycles of inquiry

All networks in the sample embraced a core feature of improvement by supporting participant leadership of CI strategies at the school level. To do so, they:

- **built the capacity of network participants to engage effectively in the network's chosen improvement methodology.** During network initiation, all hubs used a combination of network-wide convenings, asynchronous modules, and coaching to build common understanding among participants of the improvement methodology and the problem of practice. Using standardized planning tools and protocol, hubs ensured that all network participants understood and implemented improvement in similar ways. All but one network provided standardized templates to support disciplined cycles of inquiry. Most commonly, hubs provided PDSA forms to guide the full inquiry cycle or planning guides specifically for the “Do” stage ($n=6$). These templates provide a useful guide for participants to navigate the cycle of inquiry without direct hub instruction.
- **supported and facilitated the effective use of data.** Using data for improvement is a central tenet of the NSI strategy. All hubs worked to help network actors develop new practices that reposition data as tools for improvement rather

than evaluation. Hubs provided customized support to teams at the school level focused on improving data capacity. All networks used coaches to conduct periodic check-ins with school teams, some as frequent as weekly in-person school visits. These coaching meetings focused on participants' areas of need.

Data literacy was the most consistent area of focus across all networks. Coaches helped participants (a) analyze data, (b) create measures specific to their change ideas, and (c) create data visualizations. This prioritization of data literacy across networks continued throughout the second year of data collection, suggesting that participants' need to understand data for improvement remains high.

- **foregrounded equity.** Although some networks ($n=4$) did not launch with an explicit eye to equity, by the second year of the study, CPRL observed a dramatic shift: all networks began



I like that they not only hear us, but they also use the data that we give to them, and they make their own interpretation and analysis... So they're also viewing it along with me—I'm not just the only one looking at students' work. They're also looking at my students' work, and then because they have a math background, they're aware of what we're doing in the classroom and they understand it well.
-network participant, teacher

prioritizing diversity, equity, and inclusion (DEI) in their inquiry activities. Every network offered DEI resources to participants, including assigned readings, asynchronous modules, and guided discussion protocols. Although there is certainly variance in the depth with which networks are engaging DEI, attention to these issues has grown substantially across the sample, and networks are seeing results—participants in five networks report changes in teacher behavior and deeper awareness of bias in instructional practice and mindsets. These educators said the network encouraged deeper inquiry into the challenges faced by Black, Latinx, and low-income students and reported positive shifts in their expectations of these students. Because there were no significant, observable changes in the strategies of these NSIs, this shift can be attributed to the foundation’s continued emphasis on DEI through its own community of practice for NSIs (NSI COP) and asynchronous support provided in a moderated online platform (i.e., the NSI Exchange). Despite the increased attention to DEI, most networks ($n=7$) do not have systems for monitoring the strength of equity-centered culture. Only two hubs are actively using equity measures to monitor how well participants are integrating equity-centered concepts into their improvement work.

- **distributed leadership at the building level.**

As hubs developed differentiated methods to build participant capacity, some began building participants’ capacity to guide their own school-level learning. In half the sample ($n=4$), hubs engaged select network participants to serve as school-level capacity builders. These hubs either (a) officially recognized team members as capacity builders and allotted time

for participants to share their expertise during convenings or (b) used a cascade model—a tiered approach in which one set of participants would train others at the school site. These approaches accomplished two important goals: They (a) extended the capacity of the hub so that hub staff and coaches could focus on other priorities and (b) nurtured school-level leadership to strengthen team culture and identity and promote sustainability.

Despite leading improvement activities at the school level, participants in most networks are not yet maximizing the benefit of the improvement process. In general, network teams are not completing rigorous cycles of inquiry ($n=5$) or connecting testing results to the network’s established theory of improvement ($n=5$).

A critical feature of improvement is examining the efficacy of change ideas in various contexts and surfacing which solutions are effective for which individuals and under what conditions. In the ideal implementation of the Study phase of the testing cycle, participants analyze collected data, compare the actual results with their own predictions, and identify gaps in their understanding about how, why, and under what conditions the solution works. Through this analysis, participants can refine both their immediate inquiry cycle hypotheses and the broader theory of improvement. Once this phase is completed, participants are prepared to act on their updated hypotheses by (a) adapting the solution to test in new or broader circumstances, (b) integrating the solution into standard practice, or (c) abandoning the solution if it did not produce results. This rigorous examination of an intervention and the hypotheses that undergirds it requires that ideas be repeatedly tested under a variety of conditions and that teams closely examine variations in student outcomes.

CPRL found that in most networks ($n=5$), testing cycles lacked the necessary rigor to produce effective change ideas. Teams in these networks often focused only on the aggregate impact of a change idea (i.e., whether it worked) and not on deeply studying their testing cycle data to determine why they were seeing those results, which students benefited from the idea, and how implementation conditions may have moderated impact. As a result, decisions made in the Act phase were, at times, focused only on adopting or abandoning an idea rather than building on a line of inquiry about why those were the results and what different students might need based on their testing cycle results.

Additionally, only three networks have developed the processes necessary to identify effective change ideas that include both a set of measures to monitor the interventions and a process to test ideas under a variety of conditions to understand for whom the idea works and under what conditions. In these networks, the indicators associated with school teams' tests are standardized to allow the network to easily track the effect of change ideas because these networks have committed to addressing a limited set of common secondary drivers across the network. Though the change ideas were not always the same, the network could monitor the impact made on a particular driver by tracking the efficacy of many related interventions in a synchronized, concerted manner.

Further, in most networks ($n=5$), teams did not actively use theories of improvement to guide their testing work (see p. 22). Instead, most teams executed local inquiry cycles without a full understanding of where these small, contextualized tests sat within the larger ecosystem of changes needed to address the broader problem of practice. Without the systems-level framing that theories of improvement provide, it is difficult for participants to make sense

of their own impact, pressure test their own assumptions, and articulate high-leverage next steps.

Codification, spread, and adaptation of promising solutions

Only a few networks ($n=3$) accelerated knowledge generation by codifying and spreading effective ideas and supporting new teams and sites in adapting these promising solutions to suit local conditions. One of the hub's critical responsibilities is to "harvest and manage school-based improvement learning by making it visible to others in the network and facilitating the spread of the most promising change ideas" (Russell et al., 2019; p. 8). Yet only a few networks effectively pursued this agenda. Networks that struggled to spread knowledge did not consistently facilitate full testing cycles at the school level, nor did they test the same change idea in multiple conditions to truly understand if it works and for whom. Further, while most networks ($n=6$) have hub-managed repositories for storing relevant resources, only the three networks noted above used these as a vehicle for capturing and spreading effective change ideas. The remaining networks used the repository primarily for capacity-building efforts (e.g., sharing documents, protocols, literature).

Participants in the six other networks did still spread ideas, albeit in a less methodical fashion. School leaders and practitioners in every network report that they value the network, are enthusiastic about what they are learning, and are sharing those learnings with others in their school or district. School leaders, in particular, are opportunistically sharing what they are learning in the network with other educators in the building or to peers in other schools. However, because few networks have systems in place to rigorously test ideas, these leaders are sharing practices and change ideas that may not be reliably effective.

Monitoring network function and health

The hubs in all sample networks ($n=9$) monitor network function and health, albeit to varying degrees and with varying levels of rigor. Just as school-level improvement work requires participants to evaluate data consistently to understand the efficacy of interventions, network-level management requires hubs to assess network function and health consistently to determine what refinements to their support strategies are needed. Tracking data on network health allows the hub to track the capacity needs of participants, the existence of particular cultural attributes, and the efficacy of network support.

In all sample networks ($n=9$), hubs collect network health data through feedback surveys, exit tickets at convenings, discussions with hub coaches, and the Partners for Network Improvement (PNI) Network Health Survey.⁷ Still, across the sample, there is variation in how formalized network health monitoring processes are. For example, about half of hubs ($n=5$) have explicit tools to help them measure and identify capacity needs. These range from trackers and rubrics that coaches use to assess the teams' needs to participant self-assessment survey items administered at the close of hub events. The remaining hubs ($n=3$) use less formal tools, such as coaches' notes and impressions, to determine team needs. The hubs that rely on less formalized systems and tools to monitor network health do not have regular hub routines to (a) make interim judgments of network health and (b) act on information about network challenges and needs in a timely manner.

Across the sample, hub coaches played a critical role in this network health monitoring. Most hubs ($n=7$) used coaching to collect data on team health via coaching notes or other tools (e.g., coaching rubrics).

For example, in one network, coaches regularly use a rubric to assess how the school teams are functioning in order to identify both site-specific and network-wide needs. The full hub team regularly collected and met to reflect on these data. Additionally, in some networks ($n=3$) hub coaches work collaboratively with school leaders to monitor the work of the school teams. Coaches in these networks regularly meet with each school leader to discuss their observations of the team's work and how to mitigate any barriers to the implementation of improvement work.

⁷ The PNI Network Health Survey is administered once a year and serves as a lagging indicator of network health.



Characteristics of effective networks and network hubs

Even though all networks enacted many of the core processes highlighted in the literature and represented in the NSI Theory of Network Management (see Figure 3), performance on early outcome indicators reveals considerable variation in network efficacy. Two networks—Networks A and B—outperformed the others on all three indicators of network success. These networks:

The through line we've found in our work, our regional aim, and [school] contexts—it's about shifting adult practices, and has nothing to do with fixing kids.
-hub coach



- **Strengthened adults' mindsets and practices.** In both networks, participants gained a deeper understanding of the problem of practice and aligned solutions and, accordingly, were better able to serve students. Participants became skilled at using data to test, adapt, and codify solutions, and they valued using data for improvement purposes, so much so that participants collected, studied, and acted on data previously perceived as inaccessible. Network A also saw participants increasingly using systems thinking to understand problems. The network noted an uptick in site-based collaboration across departmental silos and in the use of improvement methodology across schools and districts.⁸
- **Spread effective change ideas.** Both networks spread and scaled rigorously tested change ideas within and beyond the network. In both cases, change ideas that had been vetted across different conditions and with different students were codified and spread to other NSI teams. For example, in Network A, a change idea regarding targeted student follow-up was tested in a number of contexts and proved to be effective. By the second year, this idea had been formally codified, and schools across the network successfully imple-

mented it. Both networks also scaled vetted change ideas beyond the network. For example, in Network B, a network team worked closely with a neighboring school district to share the processes tested in their NSI and to help the district revamp student-support processes. In another case, a network team reported spreading vetted interventions to other schools within their district. Both hubs also regularly present learnings from their networks to the field.

- **Demonstrated achievement of leading student-level outcome indicators aligned with the network aim.** After only one year, network participants and hubs in both networks reported early observable and significant gains in student outcome indicators. One network reported coming within 3 percentage points of the network's 2-year targets. The other network, a more mature network, was able to compare its work with the previous year and noted a gain of over 20% in the student outcome indicator.

While A and B were the only two networks to demonstrate strong outcomes across all three indicators, other networks did perform well or moderately well on one or more indicators. Most networks ($n=7$) reported some improvements in adult behavior, particularly in data literacy and the adoption of an improvement mindset. Additionally, four networks reported progress toward student-level outcome targets after the first year, though not as quickly or substantially as those reported by Networks A and B.

⁸ In the second network, collaborative behaviors were already common, so an increase was not noted.

A final network in the CPRL sample could not be assessed against all success indicators because it had not begun inquiry cycles when CPRL concluded data collection. Yet by all collected measures, it stands out for its promise. This network (Network C) shows similar structural design to Networks A and B and has already made the same set of management decisions, suggesting that the network is well positioned to succeed.

Comparing the work of Networks A and B with the rest of the sample uncovers a number of reasons for their standout performance. While all networks engaged in the technical work (Russell et al., 2019) of organizing the NSI's core actors and activities, the two most successful networks did that and more. Both actualize a hub-level theory of change that actively positions the core principles of networked improvement as critical drivers of effective network management. Both hubs brought experience in applying improvement methodologies to their own practice as hubs before launching their grant-funded NSIs and therefore understand these drivers to be foundational to shifting the way schools and districts approach not only the network's problem of practice but also problem-solving in general.

These drivers include:

1 Using CI principles and methods to guide an ongoing NSI management-improvement process that draws from and feeds into the problem of practice-improvement work

3 designing systems that allow the NSI to rigorously test, vet, and codify effective change ideas

2 developing strong network routines and norms to spur cross-team problem-solving and collaboration

4 meaningfully integrating systems-level actors into the network to accelerate spread and systems change

Implementing an NSI's technical work without concurrently acting on these management drivers is insufficient to accelerate progress toward the network aim.

Using CI principles and methods to guide an ongoing NSI management-improvement process that draws from and feeds into the problem of practice-improvement work

Beyond simply supporting the technical work of teams, hub leaders in Networks A and B see the management of the network as one of the drivers of change that could contribute to their NSI's success. As a result, these leaders assumed a reflective practice and modeled the CI methodology in their own work as network facilitators.⁹ Both hubs positioned themselves as participants in, rather than orchestrators of, the improvement work of the network.

This hub-level improvement practice operates concurrently with the hub's constant reflection on the outcomes of the network's problem of practice. In fact, in these two networks, the simultaneous improvement cycles are inextricably connected, and hub leaders consistently use learnings from each cycle to inform the other. These improvement processes mirror the methods used by network participants but are ingrained in hub norms and routines rather than explicitly supported by formal tools and protocols (e.g., PDSA forms). Hub leaders commonly used the following four routines to operate the two interconnected cycles of inquiry:

1. **Hub members meet regularly and collaboratively examine network data to identify problems in network implementation and network progress toward outcomes.** For example, one hub met frequently to review data related to network strategy and outcomes. The

data including a suite of participant engagement data (e.g., attendance, usage of the online platform), observation notes from coaches about participant capacity and progress toward outcomes, exit tickets from network convenings, quantitative data about school-team change ideas, and aggregate performance data about progress toward the network's aim. Together, hub staff identified challenges in management processes and systems, informally examined root causes, and ideated potential solutions to management challenges.

2. **Hub members execute short-cycle tests to remedy these problems.** Having identified potential improvements to how they might manage the network and facilitate network health and progress toward aims, these hubs then engaged in short-cycle tests to determine if those solutions work. These hubs did not use traditional end-of-year strategic planning processes to make modifications to network operations and systems. Instead, hubs examined network health and outcome data regularly and responded quickly with experiments designed to improve network structures, systems, and management. Because improvement mindsets and practices are so ingrained in the institutional culture of both hubs, their short-cycle tests mirrored a traditional inquiry cycle, even when they did not use a formal PDSA protocol or similar tool. These short-cycle improvements at the hub level showed network participants how to effectively implement the improvement methodology and result in real-time improvements of network systems.
3. **Hub members continue to refine interventions.** These hubs rigorously refined their hub-level interventions and studied the results of rapid-cycle tests to ensure their efficacy. Once

⁹ Notably, Network C is also setting up systems that strongly suggest they will use dual-level improvement processes to continually improve network strategy and scale management learnings beyond the network. Whether their approach will result in similarly strong outcomes to Networks A and B remains to be seen as the network launches improvement cycles.

interventions were deemed effective, they were adopted into the network's implementation strategy. For Network A, which was managed by an external intermediary, these learnings informed the management of the foundation-funded NSI and the other other networks the intermediary managed. In Network B, operated by a district entity, these modifications have resulted in improvements to policies and practices that affect educators and students across the system.

4. **Hub members constantly connect learnings from testing cycles to the network strategy.**

These hubs engage in a constant toggle between the two cycles of inquiry, using learnings from the testing cycles to inform the overall strategy and vice versa. Among other things, hub leaders monitor the predictive indicators of network outcomes—for example, changes to adult behavior and practice—to continually identify the needed changes in network strategy and management in order to achieve the network's aim.

To illustrate this process, in Network A, coaches noted a pattern of team dysfunction that was impeding progress toward site-level aims at a number of schools. Coaches brought this pattern to the broader hub team, which brainstormed possible root causes and aligned solutions. The hub then experimented with a variety of management interventions (e.g., additional coaching support, personalized outreach to school leaders). When effective management interventions were uncovered, they were embedded into coaching practice and continually adapted by the team. The hub used these learnings to strengthen network strategy by updating the network-level theory of improvement to include a driver around team operations so that participants themselves could begin improving site-level solutions.

This type of interlocking hub- and site-level improvement process meaningfully differs from the type of monitoring that the remaining six networks employ. As previously noted (see p. 26), all other networks in the CPRL sample have established monitoring systems that allow them to track network health and outcomes. Hubs across the sample use these data to make improvements to the network

operations. In some cases, hubs make immediate changes to network practices based on collected information. For example, in one network, school leaders expressed the need for more planning time with their teams, so the hub immediately allocated a portion of network convenings to leadership team meetings. Changes like these are responsive, but they are not the result of a deliberate, ongoing process aimed at improving network outcomes, like those described above. Instead, the changes CPRL has observed are either (a) reactive and not closely tied to the network's broader theory of improvement or (b) significant changes made at the end of year as part of a traditional strategic planning process, thus delaying their impact.



I'm hopeful that what we're learning from this and doing is that continuous improvement actually becomes the way of the work of the district, versus something for Gates or something for a project that we're just doing now while we're working together—[that it] actually becomes ways that, you know, our district leadership team functions, our teacher teams function, etc.
-district participant

Figure 4. Portrayal of effective NSI work based on CPRL findings

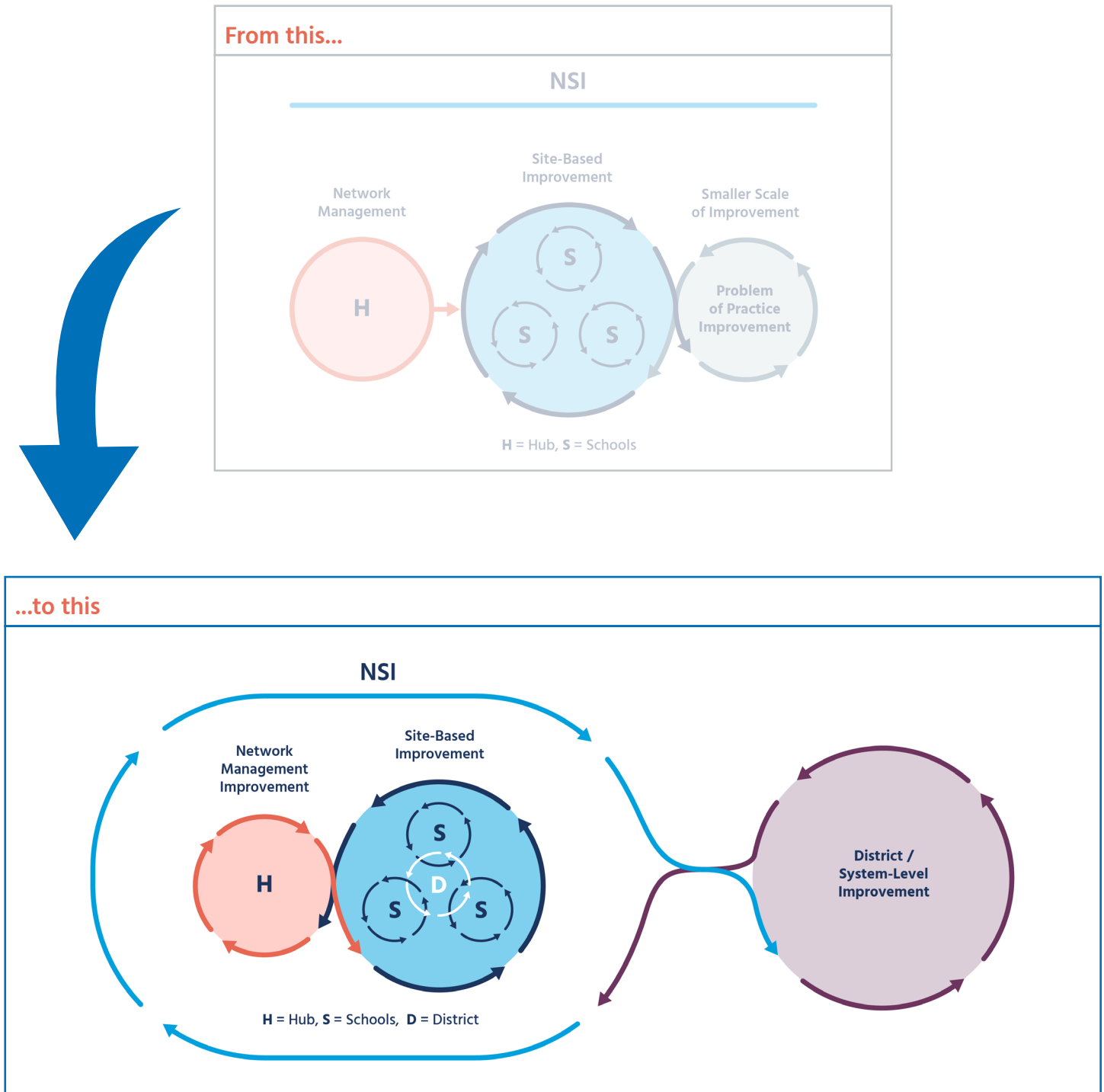


Figure 4 updates the portrayal of NSI work, captured in Figure 2, with the addition of the hub’s management-improvement cycles, and district involvement in site-based improvement cycles to the NSI work, which ultimately enables continuous systemic improvements rather than limiting improvement to the problem of practice. CPRL’s changes are noted in the bottom diagram and the extant literature’s portrayal is provided for reference at the top as a lightened image.

In Networks A and B, this rigorous reflective improvement practice was a linchpin of effective management that allowed the networks to fully optimize the execution of field-level technical work. In particular, in using more effective management practices, these two hubs were able to attend better than other networks in the sample to the following activities: (a) cross-team collaboration, (b) rigorous testing and vetting of change ideas, and (c) engagement of the appropriate actors to affect sustainable, systems-level change.

2 Developing strong network routines and norms to spur cross-team problem-solving and collaboration

The principles of networked CI are countercultural to traditional modes of working in schools and districts, which have traditionally been bureaucratic, hierarchical, departmentally siloed, competitive, and accountability driven. To unsettle these modes of working and thinking, effective hubs help actors develop new mindsets and behaviors, particularly around data and collaboration. All sample networks saw some success in helping participants establish an improvement mindset and consider data as tools for improvement rather than accountability. Networks A and B, however, were among the few hubs ($n=3$) that designed explicit structures and routines that resulted in consistent and meaningful cross-team collaboration.

All hubs ($n=9$) helped school teams develop light-touch relationships that allowed teams that would not normally interact to share novel ideas and ways of thinking (Russell et al., 2019). But Networks A and B went further and developed curated relationships and explicit, regular routines that prompted groups of schools to collaborate on substantive work. Both networks have taken a unique approach to attending to cross-team relationship curation: in addition to

linking participants at network events, they have grouped similar schools into smaller affinity groups and designed routines that enable those teams to connect more frequently and in more depth. These groupings allow participants to collaborate on improvement work during inquiry cycles and, as a result, form stronger relationships. In both networks, representatives from affinity group teams meet several

times a month to reflect on their data and collaborate on shared or similar change ideas. Notably, teams in both networks were not typically geographically proximate and thus primarily met virtually. The strength of these connections were not left to chance; each hub intentionally grouped teams (e.g., around school type, student population, interest in testing particular change ideas) and articulated clear expectations around a regular meeting cadence and content for meetings outside network convenings.

These collaborative structures actualize an important foundational principle of CI: designing structures that amplify user voice. In both networks, these routines make clear that the hub should not be understood as the sole source of knowledge or as the only significant touchpoint for participants. Instead,



Our teams end up hearing, 'Oh, [this team] has the same challenges as we do, and this is... [what] they're doing to tackle it [that] has been successful.' So... across [the network],... for the most part, everybody has a lifeline or knows somebody that does their same role in some other region or some other city or some other school. Thanks to all these touchpoints.
-network participant

In this network, in this space, I think our relationships are going really well with our school sites. I think we've positioned ourselves really well to really get the most out of these teams because they know we are working with them: We're not working at them; we're not doing things to them. We're really here together. I think our relationships are really, really solid.
-hub staff



all network members are assumed to have valuable expertise that they are encouraged to share directly with their peers. In Network B, a more mature NSI, longtime collaborative routines have contributed to a culture in which informal, unmoderated cross-team collaboration is common. For example, during inquiry cycles, teams report independently accessing a shared data dashboard¹⁰ to identify other sites

that have successfully implemented interventions and seek out their guidance directly. There is some evidence to suggest that this type of organic, collaborative culture is emerging in Network A as well.

In most other networks ($n=5$), the cross-team participant touchpoints are primarily at network events, like convenings, where teams connect through formal, hub-designed activities. Typically, once networks reach the inquiry cycle stage, these cross-team working sessions are not used for complex, cross-team problem-solving work (e.g., data reflection activities), but rather for high-level share-outs of successes and challenges. Across the sample, participants generally value opportunities to connect with other schools,

but they reported that they found convening sharing routines to be unproductive because they did not have opportunities to collaborate with schools with similar conditions, similar experience levels in the improvement methodology, or aligned drivers. In sum, participants in these networks appreciate the chance to connect with other schools but are eager for a more curated experience that lets them collaborate on the substance of their improvement work, as is the case in Networks A and B.

Designing systems that allow the NSI to rigorously test, vet, and codify effective change ideas

Networks A and B were two of only three networks in the sample that designed network systems to rigorously test, vet, and codify effective change ideas. This success was rooted in an early decision: Both networks intentionally aligned participants around a limited set of high-quality interventions. Coordinating the content of inquiry activity positioned these networks to develop a stronger, more diverse evidence pool for each intervention.

The two networks took different approaches to limiting the total number of change ideas in play and ensuring their initial quality. In Network A, the hub produced a detailed theory of improvement and, before launch, identified the high-leverage drivers and aligned research-backed change ideas the network would test. Teams had the flexibility to choose which interventions they would pursue, but the total number of ideas in play was limited enough to ensure that they would be tested across many sites with differing conditions. Teams often supplemented the core set of change ideas with their own innovations. If any of those interventions proved to be successful locally, the hub picked them up and scaled them for testing at other network schools. In Network B, network

¹⁰ This dashboard is available to all schools in the larger system.

Even if we don't necessarily get the results that we wanted or hoped for, we still have data that can tell us something... And that can either lead us into a different direction or, if we think we saw the improvements that we wanted, we can try it again, like I said before, to make sure that it wasn't just a fluke, that we seem to be getting consistent, positive results.

-network participant



teams initiate the improvement work by devising responsive solutions based on local challenges. The hub manages a shared data platform that captures these change ideas once they are determined to be reliably effective. Once identified, the hub recruits additional teams from the NSI to form subgroups to test the ideas further. In both cases, these processes ensured that ideas were (a) high quality and well suited to

advance the network toward its aim and (b) tested across enough contexts to identify for whom and under what conditions they worked.

Unlike other NSIs in the sample, these two hubs emphasized the completion of the Act phase of the improvement cycle. Once teams gathered and analyzed data from testing cycles, they made deliberate decisions about what the next cycle should focus on. The network studied both site- and network-level data to gain insight into which students were best served by each intervention and then made modifications or selected a new change idea. This type of analysis was a collective endeavor, with teams assessing and acting on their local findings, and the hub aggregating learnings from all teams and setting in motion network-level next steps. In contrast, most

other sample networks ($n=5$) skipped the Act phase entirely, instead moving from one testing cycle to the next without deeply examining the conditions that had enabled an intervention to work.

To support teams and ensure that testing was appropriately rigorous, both hubs provided extensive support through scaffolded data collection templates and protocols, bespoke data assistance, and frequent team touchpoints with coaches.¹¹ Once a confluence of data from different sites suggested that a change idea was effective, the hubs used knowledge repositories to codify those interventions and any details about how teams adapted them to meet local needs. The hubs captured this information in shareable change packages that they proliferated within and beyond the network. By owning the codification process, these two hubs were able to ensure that worthy ideas were captured and packaged for optimal spread.

4 Meaningfully integrating systems-level actors into the network to accelerate spread and systems change

The roots of educational inequities sit at the intersection of overlapping spheres of influence, which means that sustainable solutions require an analysis of the entire system and a multilevel approach to change (Bryk et al., 2015). Networks A and B, however, are two of only three hubs in the sample that designed structures that generate the type of substantial engagement between field- and district-level actors needed to spur sustainable shifts in both the way systems approach the immediate problem of practice and change-making more generally.

These two networks have built an infrastructure that engages actors from various spheres of institutional

¹¹ In one network, this centralized system is the sole monitoring platform used by all participants. In the other NSI, the shared, central system supplements local data infrastructure.

influence in linked inquiry cycles around shared drivers of change. In both networks, a representative cross-section of district staff, school administrators, and student-facing faculty play a direct role in collaboratively analyzing the problem and developing complementary solutions that are appropriate for

each level of the system. This chain of improvements accelerates the pace of change and has more staying power because, with the inclusion of system-level district actors, teams are not only able to more fully address the problem under investigation but can also influence the way the districts approach problem-solving altogether. The changed problem-solving landscape makes it possible for schools and districts to sustain the improvements arising from the network and to effectively tackle other issues beyond the immediate scope of network work.

In Network A, for example, district representatives are active participants on school teams and help plan and implement change ideas. In at least one case, direct participation in the network convinced district actors of the value of the improvement approach itself, and they have begun scaling improvement practices (e.g., data-driven inquiry) to other schools in the district. In most networks ($n=5$), however, district staff rarely worked alongside school teams and instead played an observational or facilitative role.

Although Network C is newer and has yet to demonstrate district-level change, its model of district involvement is also promising: the district is a part of the hub and has leveraged a knowledgeable and influential cross-section of district stakeholders to be part of the hub team. These district representatives coach teams at the school site between network convenings, interact closely with teams during planning time at convenings, and field questions and concerns throughout the year. Other district hubs in the sample behave similarly, but the critical divergence comes in the district's commitment to this work. The district commitment to the network approach includes (a) hub representation from a wide range of district offices (i.e., all central office divisions are represented in or strongly connected to the hub and have been involved in the execution of the grant), (b) engagement in the work at both the school- and district-leadership levels, (c) engagement in the improvement cycle alongside participants, and (d) incorporation of effective ideas and learnings into district practices and processes.

A lot of times in this district, we see something come and go in a snap, you know what I mean? And it's almost like we didn't feel like [this was going to] stick around. So when this came back, when we're seeing all the same faces from [the hub], we're seeing the same people in the cohort. It was a really good reinforcement to us to be like, 'OK, we're committed to this.' You know what I mean? The district has committed. We're seeing our school leaders there. We're seeing our district leaders there again. So that was really a positive motivation for everybody to really commit to this.
-network participant



IV

Implications for
the foundation
and the field

Implications for the field

Taken together, the evaluative and descriptive findings reveal an updated NSI Theory of Network Management (see Figure 5). This theory synthesizes what CPRL learned over the two years of its study. It reflects findings that enrich the discussion of the technical work of NSIs, and it represents new learning about the totality of work that a hub and network must undertake to realize transformational, equity-centered change. It asserts that a rigorous, hub-level CI practice and meaningful integration of system-level actors is foundational to the successful implementation of NSIs. The hub's improvement practice interacts with that of the participants, allowing the hub to refine its own management strategy while supporting progress toward network-level aims (see Figure 4).

In the past two years, two networks have fully demonstrated the promise of the NSI reforms, and a third is on its way to doing so. The two standouts have enacted the core actions and realized the early outcomes represented in the updated Theory of Network Management. In both cases, hubs effectively acted on critical management drivers around the interlocking levels of improvement, actor engagement, collaboration, and the rigor of testing. The remainder of the networks in this study have seen smaller wins, including improvements in participant mindsets with respect to data use and professional practice. Those hubs, however, have yet to adopt, implement, and continuously improve a management approach that is well matched to the ambition of their aims and the reform's.

In the manner of CI work, variation calls for attention, examination, and response. The report thus far has drawn out and examined observed variation in the sample and found that deeper consideration of network management is in order if the field is to realize the full potential of NSIs. The following recommendations provide guidance to hubs and the foundation as they support that effort.

Figure 5. Revised NSI Theory of Network Management

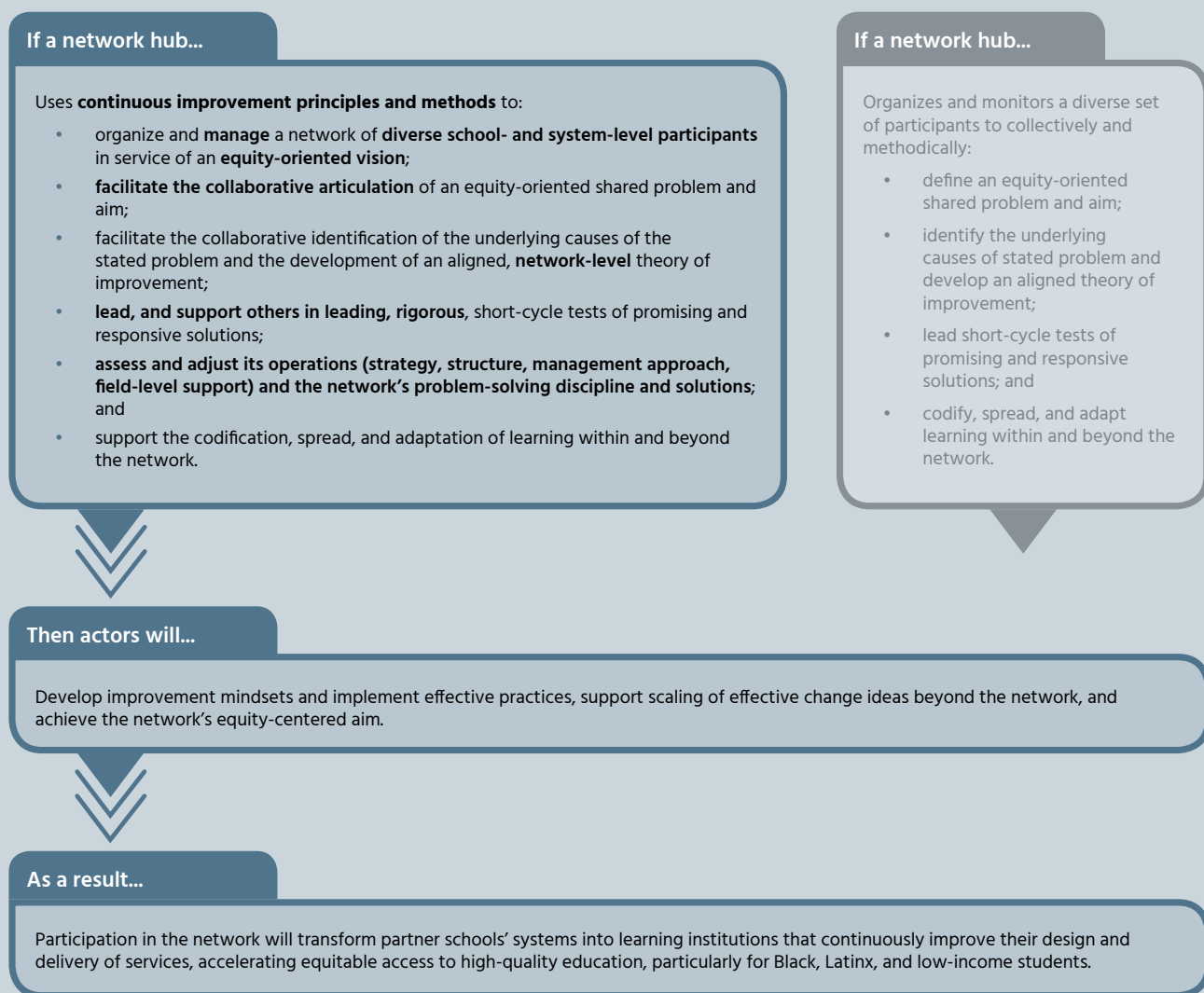


Figure 5 juxtaposes CPRL's proposed revisions to the NSI Theory of Network Management with the original text (see Figure 3). CPRL's changes are highlighted in bold in the left-hand box; the original text is provided for reference in the gray box on the right.

Recommendations for hubs

The most influential change that hubs can make to improve the implementation of networks is ensuring that management strategies are considered a part of the network's long-term success and are clearly articulated in the network's theory of improvement. The hub's primary responsibility is to coordinate and facilitate the network's activities. To do so effectively, hubs must integrate management into the network's theory of improvement to monitor and ultimately measure the efficacy of network implementation.

Hubs should consider the problems that arise in network management as problems of practice and engage in disciplined inquiry to continuously improve upon the network's own theory of management. Further, this improvement approach requires the hub to monitor the interconnected relationship between the strategic implementation of the NSI approach and the problem of practice. This self-reflective practice has the potential to improve the quality of the network, accelerate the pace of change toward resolving the problem of practice, and bring these learnings to the organization's other improvement efforts.

Alongside other drivers of change, the following management levers contribute to the network achieving its impact:

1 Center equity in the design, management, and spread of improvement work

2 Engage district actors to tackle the right drivers

3 Distribute leadership

4 Emphasize meaningful collaboration

5 Study before acting on learnings from short-cycle experiments

1 Center equity in the design, management, and spread of improvement work. The ultimate goal of the NSIs initiative is to improve educational opportunities for Black, Latinx, and low-income students. At its core, the NSIs initiative itself is an equity strategy that has the potential to fundamentally change how schools and school systems have traditionally supported all young people, but particularly those most marginalized in society. Hubs can move their networks closer to achieving systems change by making three key management decisions: (a) integrate district decision makers into relevant testing cycles to ensure changes are made to district-wide policies and practice, (b) explicitly identify equity drivers as part of the theory of improvement to ensure that all network actors deliberate ways to eliminate existing practices that give rise to inequities, and (c) rigorously examine which changes work for the most historically marginalized students and under what conditions. These tactics can ensure that the NSI focuses on the changes to the system as well as to individual practices that together can meet the needs of Black, Latinx, and low-income students. As networks consider expanding their work to bring in the voices of student and community actors, this management concern will be particularly salient as hubs determine how to elevate their voices as collaborators rather than as recipients of change.

2 Engage district actors to tackle the right drivers. Achieving ambitious aims requires both a well-matched strategy and the involvement of the appropriate actors. In the sample, hubs are effectively engaging school-level actors (e.g., practitioners, school leaders) to address the drivers within their locus of control. However, hubs are much less frequently engaging

the right district leaders to create the changes necessary to effectively scale and sustain local improvement efforts. Hubs should expect and create the conditions for district engagement in improvement activity in order to (a) ensure continued alignment with district priorities with school-level improvement, (b) remove critical barriers (e.g., funding, time), (c) test and improve district-level policies and practices related to the problem of practice (e.g., improving district data-management systems to support PDSA testing data collection), and (d) establish improvement methodology and the appropriate improvement mindsets as a system-wide norm.

3 Distribute leadership. Networks are diverse communities of actors who all have the potential to contribute unique expertise to addressing the problem of practice. Hubs have limited capacity to lead every aspect of the network experience, and they should not try. Instead, hub leaders should focus on leveraging and, as needed, building the capacity of each actor so they are prepared to lead improvement work in the spaces where they have the most relevant expertise. For example, networks have had great success when they have trained participants in the use of an improvement methodology and then empowered them to lead site-level improvement work relatively independently.

4 Emphasize meaningful collaboration. One of the primary benefits of the NSI model is to have educators across various contexts struggling together to solve complex problems. This model departs from traditional forms of educators' support (e.g., professional development) precisely because it necessitates collaborative efforts. Participants in the study consider learning from their peers to be one of the primary

benefits of participation, but they desire more purposeful collaboration with others who share similar contexts. Hubs have the opportunity to create meaningful and consistent cross-team collaboration to maximize the learning across the network and build on one of the most significant benefits of the NSI experience.

- **Study before acting on learnings from short-cycle experiments.** The efficacy of short-cycle experimentation hinges on the degree to which network members are disciplined in their approach to testing and innovation. Being disciplined requires that participants (a) select a likely solution; (b) predict how the solution will work; (c) create and run an experiment to see if their solution works as planned; (d) study empirical evidence to determine if, how, and why results deviated from predictions; and (e) decide and act on next steps the team should take to develop a better understanding of and a stronger solution to the problem at hand. Short-changing the Study phase of short-cycle experiments risks relegating decision-making to a reliance on intuition about what works, for whom it works, and under what conditions. While relying on intuition may seem easier or quicker in the short term, it obviates much of the benefit of short-cycle tests. It further obscures gaps in understanding and opportunities for learning and makes it difficult to ascertain the extent to which proposed solutions really work for the people in the conditions under consideration.

In order to execute the Study phase effectively, hubs should support teams in articulating hypotheses that both anticipate intervention outcomes and clearly define why teams expect those results. This type of scaffolding can help teams identify practical measures that allow them to examine nuances in their data more purposefully, so they can consider why the intervention works for some students but not others and learn how to improve a change idea or choose another one based on the analysis. Hubs should also support teams in developing disciplined routines that prompt and ensure that teams revisit their hypotheses and analyze the conditions of their test results.

Recommendations for the foundation

Based on the performance of the networks in this study, the foundation's NSI strategy appears to have the potential to generate innovations that will improve educational opportunities for all students, particularly those who are Black, Latinx, and low-income. Still, to date, most sample networks are not well positioned to meet the foundation's broader vision to fundamentally transform the way schools and school systems solve "wicked problems." Given the ambition of the reform, and its relatively short timeline, this is not entirely unexpected. The findings in this report, however, suggest that there are a number of specific recommendations for the foundation to consider to increase the potential of all NSIs to achieve their ambitious outcomes:

1 Encourage and support hub self-reflection

2 Identify network management as a driver of change for CI

3 Prioritize equity as a driver of change

4 Engage district actors meaningfully

5 Differentiate grant making for networks pursuing different types of change

6 Monitor implementation

1 • **Encourage and support hub self-reflection.**

The foundation has provided a robust set of supports for hubs to continue to learn together to improve the quality of their work, including the NSI Community of Practice (COP), the NSI Exchange, and the bespoke technical assistance facilitated by CatalystEd. These all provide useful and important resources, but they can only supplement an organization's own efforts at CI. Hubs should be encouraged to mirror the rigorous improvement methodology they facilitate in their own networks and to continue the reflective practice that occurs at the COP in their own day-to-day work to ensure stronger NSI implementation and accelerated outcomes.

2 • **Identify network management as a driver of change for CI.**

The two most successful networks explicitly identified hub network management as a driver of change in their network-level theory of improvement. The foundation could endeavor to select grantees with explicit learning orientations that position them as participants in the improvement work, but this may exclude otherwise exceptionally qualified intermediaries. Instead, it may be possible for the foundation to leverage robust existing supports for grantees to help develop and refine management-improvement mindsets and routines.

3 • **Prioritize equity as a driver of change.**

As the foundation has increasingly emphasized and provided networks with capacity-building support for equity efforts, hubs have begun to integrate equity more explicitly into their NSI strategies. Still, continued scaffolding is necessary for networks to move from understanding equity as a learning objective to incorporating it as a foundational driver of change that will

push networks toward their ambitious aims.

The foundation should expand its efforts to fund technical assistance to support networks as they apply an equity lens to their theories of improvement. Correspondingly, the foundation might also consider supporting hubs in the development of more sophisticated measurement frameworks and tools to track the impact of complex equity initiatives.

4 • **Engage district actors meaningfully.**

Creating incentives for and facilitating the participation of district actors in the improvement process is an important runway to sustainability. To effect systems-level change, networks must enlist district actors to fill roles that go beyond observation and support. Instead, the foundation should consider providing incentives for district offices to engage in disciplined cycles of inquiry alongside school teams, while concurrently doing so within their own offices. When systems-level actors are engaged in inquiry work, they are able to enact systems-level reforms that support network progress toward the immediate aim and also begin shifting the way their system approaches change more broadly. To maximize the potential of NSIs to accelerate learning and the pace of change, the grant selection process will need to identify which intermediaries are well positioned to engage relevant systems-level actors with decision-making authority in the improvement work alongside the participants.

5 • **Differentiate grant making for networks pursuing different types of change.**

The foundation has already begun to differentiate funding by grantee capacity (i.e., Model Design and Initiation grants). To maximize its impact on the field, the foundation might additionally

consider differentiating funding based on the type of change (i.e., developmental, transitional, or transformational) that networks are pursuing. By understanding the complexity of the aim each network is organizing around, the foundation may be able to allocate resources with more precision. Developmental change efforts, for example, are well suited to refining existing systems and may be less time and resource intensive in general. Transformational aims, alternatively, require long-term investment but may result in more significant impact over time. There is a place for all types of change efforts within the NSI strategy, but it is critical that the foundation's expectations for impact are reflected in funding and grant-time-line decisions.

- **Monitor implementation.** Both the foundation and NSIs have developed relatively sophisticated measurement systems to track progress toward outcomes. Both the NSIs and the foundation can benefit from a similarly sophisticated approach to managing network implementation as a predictive indicator of longer-term success. CPRL encourages the foundation to develop an implementation-monitoring system with leading and lagging indicators, including those that emerged as particularly important in this study: (a) the integration of systems-level actors into the network improvement work; (b) the presence of systems that allow the network to rigorously test, vet, and codify effective change ideas; (c) the presence of explicit routines and norms to encourage collaboration; and (d) hub-level improvement cycles and the resulting leading outcomes of these activities, like changes in adult practices and mindsets and the spread of effective change ideas.

Through this initiative, the foundation is well on its way to helping the field better understand the extent to which NSIs are able to deliver on their promise and make the type of systemic change that has been elusive in the field of public education to date. Indeed, the NSIs in this study have taken on complex challenges that, if successfully addressed, will deliver great advances in equitable high school, postsecondary, and life outcomes for Black, Latinx, and low-income students.

The findings and recommendations from this formative evaluation reveal two key insights about the NSI hypothesis: (a) the NSI strategy holds much promise and (b) maximizing on the strategy's potential to fundamentally alter how school systems change requires sophisticated improvement- and equity-centered management practices and deep system-level engagement. Two hubs have shown the way for the others and offer an initial model for effective school and district change management through an NSI approach. Spreading their practices to other networks through direct and indirect foundation supports and grantee-management mechanisms allows the foundation to accelerate the pace at which NSIs effect change. This also increases the likelihood that the field and the foundation can take advantage of this reform as a way to fundamentally improve the way schools and school systems organize their work. This strengthened-management approach is essential to accelerating and sustaining improvements, readying schools and school systems for addressing seemingly intractable challenges in the future and realizing the equitable public education system to which the foundation aspires.

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Appendix A

Proposed NSI Theory of Network Management Measurement Framework

The following measurement framework builds upon the CPRL NSI Theory of Network Management and suggests measures to evaluate the impact of hub management approaches. While the framework highlights many of the critical indicators of successful network implementation articulated in this report and the extant literature, it is not intended to be comprehensive. In accordance with the improvement efforts it seeks to measure, the framework should be (a) adapted to accommodate the particular conditions and needs of each network, and (b) tested and improved upon by those executing this work in the field.

While the formative evaluation’s focus on network management inevitably magnifies the role of the hub in this framework, a similar tool could be developed around the equally important activities undertaken by other network actors, such as student-facing faculty and staff, school leaders, and district actors.

If the hub uses continuous improvement principles and methods to...	
	Look for...
structure and manage a network of diverse school- and system-level participants to collaboratively work toward a transformative, equity-oriented vision;	Hub articulates a theory of or strategy for network management that is explicitly a part of the overall network’s theory of improvement
	The hub curates relationships between school improvement teams (e.g., by school type, targeted student groups, experience-level, secondary driver or change idea focus) and establishes explicit routines that encourage regular, substantive collaboration (e.g., compare data; co-develop and iterate on change ideas), both at and between network events
	The hub curates relationships between district leaders, school leaders, and the school improvement team to ensure all actors are effectively engaged in improvement activities that address problems within their locus of control
	The hub team regularly collaborates with network participants on network design and management
	The hub creates and implements norms and routines to ensure information and expertise are decentralized, where all network actors contribute to network knowledge as experts
facilitate the collaborative articulation of an equity-oriented shared problem and aim,	The hub coordinates network participants (i.e., student-facing faculty, school leaders, district actors) to develop a shared, equity-centered problem of practice and network aim
	The hub supports teams to collaboratively set site-based aims that are analogous to the network aim
	The hub continually works with district and school leaders to align the work of the network to system-level vision and objectives
	The hub continually works with district and school leaders to ensure alignment between the network’s work and accountability timelines and measures
facilitate the collaborative identification of the underlying causes of the stated problem and the development of an aligned, network-level theory of improvement;	The hub implements routines for all network members (i.e., student-facing faculty, school leaders, district actors, and the hub) to collaboratively identify the root causes of a shared problem that is faced by the most marginalized students, with attention to articulating contributing factors at all levels of the system
	The hub implements routines for all network members (i.e., student-facing faculty, school leaders, district actors, and the hub) to collaboratively develop a network-level, equity-oriented theory of improvement to solve their shared problem of practice, with drivers that are sufficiently ambitious to meet the network’s aim
	The hub implements routines that prompt the network to update the theory of improvement and the associated measures regularly as they learn more about the problem and potential solutions through the testing cycles

lead, and support others in leading, rigorous, short-cycle tests of promising and responsive solutions;	The hub guides the development of change ideas, allowing for participant innovation and responsiveness to local conditions while also ensuring that ideas are evidence based, feasible, and sufficiently matched to the theory of improvement to achieve the network aim
	The hub guides the network develop common measures to facilitate collaborative learning so ideas can be thoroughly vetted across differing contexts
	The hub implements monitoring routines and develops tools to help participants examine how change ideas improve outcomes in each context, particularly for the most marginalized students
	The hub implements routines and develops tools to help participants determine the next step in the testing cycle, adoption, adaption, or abandonment of the change idea, based on the analysis of collected data
assess and adjust its operations (strategy, structure, anagement approach, field-level support) and the network’s problem-solving discipline and solutions; and	The hub monitors the network’s management strategy through examination of leading and lagging indicators of both (a) network health, function, and outcomes and (b) team health, function, and outcomes in order to determine management-focused problems of practice, particularly identifying which schools, teams, or individuals demonstrate the most need
	The hub collaborates with network participants to devise management solutions to relevant network-level problems of practice
	The hub engages continually in short-cycle management inquiry cycles that mirrors and interfaces with participant-level improvement processes in order to develop an evidence base to show which management change ideas are promising, for whom and under what conditions those ideas show promise
	The hub implements monitoring routines and develops tools to examine how management-focused change ideas improve network outcomes, particularly for the schools, teams, or individuals in need of the most improvement support
	The hub regularly collaborates with network participants to refine their NSI strategy, routines, and tools based on efficacy of management strategies
support the codification, spread, and adaptation of learning within and beyond the network.	The hub updates the theory of improvement and adjusts measures as the network learns what works, for whom, and under what conditions
	The hub manages and maintains the network’s repository of information about vetted change ideas and actively shares the learnings with network participants and leaders outside of the network
	The hub implements routines to enable network participants to spread vetted change ideas beyond the school improvement team

Then actors will...	
	Look fors...
Develop improvement mindsets and behaviors	Student-facing faculty and staff will...
	Identify problems and develop solutions with an eye toward how those changes are situated within the larger school/district system
	Regularly collaborate with each other on shared problems of practice, at and between network events
	Regularly and independently use continuous improvement processes and routines to guide changes to their practice

	Routinely develop change ideas based on the needs of the most marginalized student groups
	Routinely collect and analyze leading and lagging process and outcome data to inform decision-making
	School leadership teams will...
	Identify problems and develop solutions with an eye toward meeting the needs of the most marginalized students and attentive to how those changes are situated within the larger school/district system
	Adjust accountability timelines and measures to accommodate experimentation
	Adjust school conditions as needed to allow participants to engage in improvement activities
	Regularly meet and collaborate on improvement activities with student-facing faculty and staff
	Collect and analyze leading and lagging process and outcome indicators to inform decision making
	Use improvement processes to guide changes to school policy, structures, and their own leadership practice
	District leadership teams will...
	Identify problems and develop solutions with an eye toward meeting the needs of the most marginalized students and attentive to how those changes are situated within the larger school/district system
	Adjust accountability timelines and measures to accommodate experimentation
	Regularly meet and collaborate with school-level participants, including school leaders and student-facing faculty and staff
	Improve district data infrastructure in order to track leading and lagging process and outcome indicators
	Collect and analyze leading and lagging process and outcome data to inform decision making
	Position data as a tool for continuous improvement and experimentation, rather than as a tool for accountability
	Use improvement processes to guide changes in district policy, structures, and their own leadership practice
Implement effective interventions in their schools and districts	Network participants identify effective change ideas based on the variance in performance in different contexts within network schools and districts
	Network participants routinely access vetted and codified change ideas through the network’s repository
	School leaders implement change ideas that have been rigorously vetted and determined to be successful under various conditions, into school-wide policies and practices
	District leaders implement change ideas that have been rigorously vetted and determined to be successful under various conditions, into district-wide policies and practices
Support the scaling of effective change ideas beyond the network	The network codifies and disseminates information about how to effectively implement change ideas, including information about productive modifications to enable implementation in a variety of contexts, beyond the network
	Schools, districts, and systems outside of the network adopt network-developed change ideas
Achieve the network’s equity-centered aim	Schools and districts in the network see sustained improvement in outcomes for Black, Latinx, and/or low-income students in regard to the network’s problem of practice

As a result...	
	Look for...
Participation in the network will transform partner-schools' systems into learning institutions that continuously improve their design and delivery of services	School leaders, district leaders, and student-facing faculty and staff collaboratively articulate a vision for how the district can adopt a continuous improvement and learning model to ensure equitable outcomes for all students
	School leaders, district leaders, and student-facing faculty and staff develop an aligned theory of improvement that is inclusive of an articulate management strategy to guide progress toward that vision
	School and district leaders identify measures that allow them to continuously assess the efficacy of the management strategy and implement monitoring and improvement routines that prompt them to continually refine it
	Schools and districts develop and implement routines that prompt regular, equity-driven continuous improvement activity at all levels of the system
	Student-facing faculty, school leaders, and district actors regularly collaborate on problem identification and improvement efforts
Network accelerates equitable access to high-quality education, particularly for the most marginalized students in schools and districts	Sustained improvement in student outcomes across various problems of practice, particularly for the most marginalized students in schools and districts