

The Student-Centered Assessment Network
Testing Change Ideas in Real Time

Katie Bayerl | March 2020

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Assessment is a pivotal piece of student-centered learning. When teachers are equipped with specific, individual learning data, they can personalize instruction and support every student to reach proficiency. Quality formative assessments also increase students' ownership of learning by helping them track their own progress and providing them with the data they need to advocate for their own needs. But embedding effective assessment practices into classroom routines requires big shifts—for teachers and students—and presents several upfront questions to resolve: Which assessment tools will provide the best learning data for a particular subject or student population? Which tools are most manageable for busy teachers? Which tools provide scaffolds for students who are new to academic self-reflection and self-directed learning? How can teachers and students use the data they collect to accelerate and deepen learning?

The Student-Centered Assessment Network (SCAN) seeks to answer these questions and more by empowering a group of teachers to test formative assessment practices with their students and to share what they discover with one another. Coordinated by the American Institutes for Research and supported by the Nellie Mae Education Foundation, SCAN was launched in 2017 with 23 teachers from two Rhode Island high schools.¹ Together, the teachers and researchers are using an improvement science approach to implement formative assessment practices that engage students, expand their agency, and improve academic performance.

Recognizing the promise and challenges of SCAN's ambitious professional learning agenda, the Nellie Mae Education Foundation invested in an intensive developmental evaluation to provide actionable information for the network, while simultaneously informing the broader education field. The following brief highlights findings from the pilot year drawn from AIR's year-end project report and the developmental evaluation of the network conducted by the University of Pittsburgh's Partners for Network Improvement.² While the first year was a pilot phase for SCAN, its leaders and participating teachers are already learning lessons that have implications for others interested in promoting student-centered learning and using networked improvement communities to organize change and spread effective practice.

¹ This document summarizes SCAN activities and learnings in the 2017-18 school year. The network has since grown to almost 50 teachers in three schools in the 2019-20 school year.

² Partners for Network Improvement (PNI), housed in the Learning Research Development Center at the University of Pittsburgh, specializes in the developmental evaluation of improvement networks. Team members include Jennifer Russell, Jennifer Zoltners Sherer, Jennifer Iriti, and Chris Matthis. For more information about PNI's work, contact Jenn Russell at jrussel@pitt.edu.



Formative assessment... it's really powerful: You can see who is really prepared, who has knowledge, or is motivated... You can set up your instruction in a better, more efficient way.

-SCAN teacher

SCAN at a Glance

2017-18 Pilot Year

WHO

23 teachers representing four core subjects

WHERE

2 Rhode Island high schools

HOW

Rapid-cycle classroom research supported by a network

GOAL

Deepen student engagement and improve performance with student-centered formative assessments

CONVENED BY

American Institutes for Research

SUPPORTED BY

The Nellie Mae Education Foundation

DEVELOPMENTALLY EVALUATED BY

Partners for Network Improvement at the Learning Research and Development Center

Engaging Students Through Assessment

Far too many high school students are disengaged from their own learning, a problem that feeds serious and persistent challenges in American secondary and postsecondary education. The Student-Centered Assessment Network (SCAN) attempts to address this disengagement by identifying classroom assessment practices that allow students to take greater ownership of their own learning and, ultimately, to shift their focus from external sources of motivation (e.g., grades) to intrinsic factors (e.g., personal learning goals and self-directed accomplishments).

In contrast with summative assessments, which measure learning results, formative assessments are designed to provide frequent, actionable information that teachers and students can use to reflect, and teachers can use to plan and adjust their instructional strategies. Participants in SCAN co-constructed an initial definition of what fully implemented student-

centered formative assessment would look like in a high school classroom:

- 1. **Teachers and students frequently assess** student performance (e.g., every lesson or nearly every lesson) against expected outcomes.
- 2. **Teachers and students adjust learning experiences** to remediate gaps, move toward mastery of content and skills, and allow for deeper exploration.
- Teachers and students share responsibility for assessing progress and making instructional choices that address gaps in knowledge or skills.

SCAN hypothesized, and research supports, that such assessment practices, when implemented within the context of well-designed student-centered learning, can support more productive teacher-student interactions and improve short- and long-term learning outcomes.

WHAT IS STUDENT-CENTERED LEARNING?

Student-centered learning is an umbrella term for a diverse collection of instructional practices that prioritize individual students' strengths and needs in lieu of more regimented, teacher-directed approaches. The Nellie Mae Education Foundation identifies four core tenets that exemplify student-centered approaches:

- → learning is personalized
- → learning is competency-based
- → learning takes place anytime, anywhere
- → students exert ownership over their learning

Ample research suggests that students who participate in such experiences learn more deeply and gain access to the knowledge, skills, and dispositions they need to succeed in college, careers, and civic life.

EVALUATION DESIGN

The Nellie Mae Education Foundation invested in a two-part developmental evaluation of SCAN. In the first part, network leaders at the American Institutes for Research (AIR) reflected on design decisions, challenges, and lessons learned in the pilot year. A second, more robust evaluation led by the Partners for Network Improvement at the University of Pittsburgh's Learning Research and Development Center used a range of data to provide a descriptive and analytic portrait of the network's pilot year of operation. Data sources included:

- observations of school-based meetings and network meetings;
- end-of-year interviews with participating teachers;
- surveys of teachers designed to measure their experiences with key network features;
- documentation that teachers generated through their improvement cycles; and,
- regular telephone and email conversations with AIR staff.

Learning as a Network

The Student-Centered Assessment Network (SCAN) is designed as a *networked improvement community*, a structure that helps practitioners exchange expertise and test new practices together. The 23 teachers in SCAN's pilot year were nominated by their school leaders and then elected to join, citing three main reasons:

- 1. desire to collaborate with colleagues within and beyond their school,
- 2. commitment to continuously improve their practice, and
- 3. interest in the content focus of the network: student-centered formative assessment.

While individual teachers' entry points varied, most were motivated by a sense of curiosity about the content to be explored and a desire to improve their own teaching practice.

Learning through Improvement Science

Improvement science is a practical approach to jobembedded learning that helps organizations solve problems and improve performance through iterative, rapid-cycle testing of new ideas. With a long history in the manufacturing industry and healthcare fields, improvement science has recently gained popularity in education as leaders and practitioners seek ways to accelerate improvement across schools and districts.

A key tool of improvement science is the *Plan-Do-Study-Act (PDSA)* cycle. Practitioners begin by designing a small, specific change tied to a working hypothesis of what will achieve an improved outcome. They then test the change in the classroom, study evidence to assess whether the change produced the sought-after improvement, and decide what action to take next in light of what they have learned.

Unlike interventions that require high levels of fidelity and consistency, improvement science makes use of failed attempts and deviations as opportunities to learn and refine a change idea. Variations are particularly useful when a group of practitioners—such as the 23 teachers who participated in SCAN—test out similar changes and then come together to compare results.

Pilot Year Activities

For the first year, SCAN's network leaders focused on introducing the improvement science approach and building trust across the group. They began with four face-to-face meetings at each school, where school teams worked toward a common understanding of student-centered learning, formative assessments, and the PDSA inquiry cycle approach. Teachers from both schools then came together for a full-network meeting in February, where they continued to collaboratively explore these three core concepts. Between February and June, every teacher engaged in at least one Plan-Do-Study-Act inquiry cycle, testing out a new assessment practice in a target classroom. About half of the teachers collaborated with colleagues from their school on a formative assessment practice to try, while the others worked on independently conceived ideas. All were asked to reflect on the process in a weekly log and meet with network leaders to debrief and discuss next steps.

Network Design

The SCAN leaders made several network design decisions up front, based on their best bets about how to effectively launch a networked improvement community with an ambitious agenda. These decisions substantially influenced teacher experiences in the pilot year and included the following:

- Build a critical mass. SCAN recruited 10-12 teachers from each school to allow for informal, in-person conversations to flourish at each site. The idea was that this core group of teachers would support each other's learning in the short term and build capacity for schoolwide expansion in future years.
- Include all disciplines. By engaging teachers
 from several content areas, SCAN aimed to
 identify and refine student-centered formative
 assessment strategies that can be customized
 to any classroom and to lay the groundwork
 for expansion by engaging each school's
 departmental structures.

PLAN-DO-STUDY-ACT CYCLE

SCAN teachers used a common set of processes to enact four stages of inquiry over several weeks. The rapid-cycle approach to classroom inquiry SCAN teachers used is known as the Plan-Do-Study-Act (PDSA) cycle.

PLAN | Teachers prepare a "contract with self" to identify a formative assessment practice to test, the problem of practice they are trying to solve by trying out this change idea, start and end dates, measurement strategies, and resources used or resources needed.

D0 | Teachers implement their change for 4–5 weeks, collecting data to understand if the change is an improvement, and completing weekly logs to reflect on surprises, barriers, and ways in which students are responding.

STUDY | Each teacher participates in a structured video-conference debrief with network leaders, reflecting on the enactment of the intended plan and patterns in the student data.

ACT | At the conclusion of the debrief, teachers—in consultation with colleagues and network leaders—articulate plans, priorities, and/or adjustments for the next cycle.



- Jump right in. Network leaders prioritized getting started over perfection. Teachers had a chance to try out an inquiry cycle at the same time they built foundational knowledge about improvement science. Network leaders provided only limited feedback about the formative assessment ideas teachers were trying out, understanding that teachers would have time to build the sophistication of their attempts through subsequent cycles.
- Make room for risks. SCAN teachers were given permission to "fail fast," treating their inquiry cycles as an opportunity for learning. School teams met without administrators present to ensure a safe space for risk-taking. While network leaders did keep school leaders in the loop on the concepts being explored, they did not discuss individual teachers or share student data.
- Build investment up front. The network launched with school-based meetings that required minimal logistical effort from teachers. In addition, network leaders designed the first inquiry cycle as an opportunity for teachers to try out a new formative assessment idea of their own choosing (in any of their classrooms) to build teacher buy-in.
- Scaffold engagement and accountability. Network leaders created a template to help teachers plan their first cycles, a structured weekly log to support reflection, and a protocol to guide the final debrief. Leaders sent weekly emails to remind teachers to complete logs and created a clear window of time in which they expected teachers to complete their cycles.



[In contrast with] most professional learning experiences ... people within the group decide what's going to work and what's not going to work and how we're going about that.



Network Activities at a Glance

OCT - FEB

FEB

NETWORK MEETING

MAR - JUN

JUN
NETWORK MEETING

PURPOSE

Learn about the work and begin collaboration as a school team.

Bring the school teams together for continued learning and initial cross-school connection.

Learn how to engage in Plan-Do-Study-Act inquiry cycles.

Bring the school teams together to reflect on learning in the pilot year and plan for the next year.

NETWORK CHARACTERISTICS

4 after-school meetings, approximately once a month for one hour 6 -hour meeting in February

1-2 PDSA inquiry cycles

Documentation

- Contract with Myself
- Weekly reflection logs
- Data and other documentation optional

Video data debrief meeting with two network leaders 2-day retreat



SAMPLE STUDENT-CENTERED FORMATIVE ASSESSMENTS

Each SCAN teacher or team designed their own formative assessment idea to test, then launched into an inquiry cycle. Their ideas included the following assessment practices:

The Flex Journal: Students take time at the beginning or end of class to respond to journal prompts that ask them to assess their work and reflect upon their progress.

Multiple Choice Breakdown: Teachers provide three multiple-choice questions as a warm-up, using the website Albert.io to provide real-time feedback. Students then complete a brief online survey to reflect on their strengths and weaknesses.

Playlists: Students are assigned customized (student-specific) "playlists" (with PowerPoints, videos, and articles) to independently explore new concepts, followed by an online assessment to help determine what teaching and learning activities should occur next.

Exit Card Accountability: At the end of class, students rate themselves on each activity, from "high performing" to "need to try harder," providing explanation or evidence as needed.

Lessons From the Pilot Year

PNI's pilot year evaluation of SCAN explored multiple layers of this ambitious initiative, with the understanding that many concepts and processes were new to teachers and would take time to implement robustly. While challenges were numerous and many ideas for refining the network emerged (as expected), the overall reflections of teachers were quite positive.

Here, we summarize lessons learned about the two core ideas explored in the network: student-centered formative assessments and improvement science.

Emerging Insights about Student-Centered Formative Assessment

In their first inquiry cycle, teachers got their feet wet by selecting their own formative assessment ideas without feedback from network leaders, as previously discussed. Despite the range in complexity of those ideas, most of the SCAN teachers reported positive results in terms of their ability to execute their intended plan and the early impact of their efforts. Thirty-six percent of teachers reported that they stuck to their plan most days and weeks; 86 percent of teachers reported that their assessment ideas were moderately or mostly successful.

Figure 1: Teacher self-reported levels of implementing their plan as intended

STICKING TO THE PLAN

HIGH

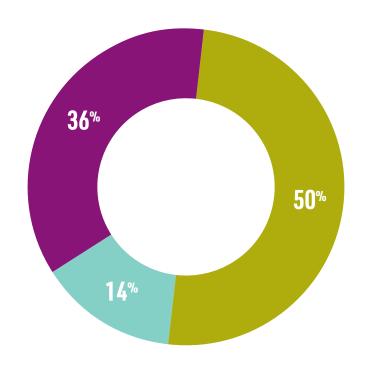
Most days and weeks, and consistent with my "contract with self," my students and I stuck to the game plan

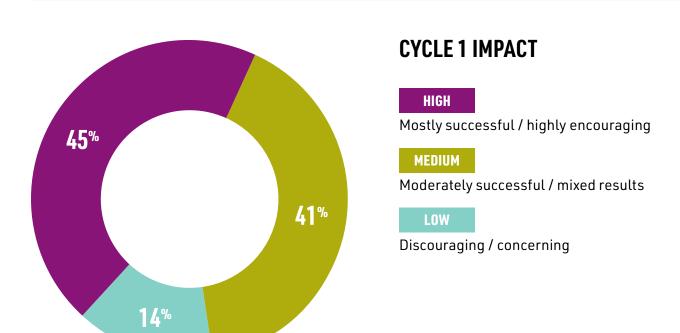
MEDIUM

More often than not, we were able to stick to the game plan (the "contract")

LOW

We stuck to the game plan less than half of the time, in terms of frequency of utilizing the change idea or commitment to its roles and routines



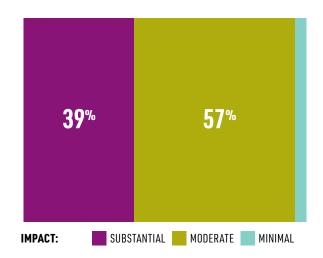


Early Impacts on Practice

Nearly all of the SCAN teachers (91 percent) reported a shift in their formative assessment practice since joining the network, and a large majority attested that the network directly influenced their increased use of student-centered formative assessment.

USING STUDENT-CENTERED FORMATIVE ASSESSMENT

Most SCAN teachers reported their participation had a **MODERATE** to **SUBSTANTIAL** impact on their use of student-centered formative assessment.



As a result of participating in SCAN, teachers reported three kinds of shifts in practice:

- A more intentional formative assessment practice. Following a structured planning, data collection, and reflection process for their inquiry helped teachers use formative assessments with more intention than they had in the past. Some teachers reported the inquiry cycles helped to clarify their thinking about student learning as well.
- Thinking differently about how to engage students. Teachers identified several new insights

about how to engage students more effectively by thinking more carefully about how they planned learning tasks, the culture of learning they supported in their classrooms, and the feedback they provided students.

 Clarification of students' true instructional needs. The formative assessment practices helped teachers better understand students' individual learning needs and, in some cases, correct their assumptions about students' levels of understanding. These insights helped teachers consider how to be more responsive to individual students in their teaching.



Formative assessment ... has helped me bring the students to the heart of [learning] ... Now the students always know what we're doing and why we're doing it, and not just in a superficial way.

It's real conversation.

Early Impacts on Students

During initial meetings, teachers expressed concern about how students would respond to student-centered formative assessment. In particular, they wondered how to promote student buy-in, given a culture in their schools focused on testing and grades. At the end of the first inquiry cycle, a large majority of SCAN teachers believed that their efforts were having a moderate or substantial impact on engaging

students in self-assessment. Figure 3 presents teacher reports on how their participation in network activities impacted how they have engaged more students, different students, and student assessment of their own performance. Some teachers noticed an impact on more traditional learning measures as well as on students' development of skills related to self-reflection and taking ownership of learning.

Figure 3: Teacher reported impact of participation in Network Activities

Large shares of participants reported that network activities are having an impact





Proficiency rates improved dramatically from the formative assessment to the summative assessment at the end of the week ... Based on the first week's results, I would say it is more beneficial than I had anticipated.

Not all teachers had positive results in their first cycle, however. A few teachers expressed disappointment in their students' engagement or performance. Teacher reflections also indicated that the pattern of student engagement varied across classrooms, with some

classes showing a marked increase in engagement over the course of a cycle, some losing engagement, and some remaining at a similar level from beginning to end. These variations seemed to be related to a variety of factors described below.

Figure 4: Patterns of student engagement across an inquiry cycle

End of cycle student engagement			
		LOW	HIGH
Initial student engagement	нон	 Initial excitement about new style waned when students realized grades were not being assigned. Cancelled classes/ absences made it difficult to maintain momentum. Teachers struggled to help students who were at different places in their learning. 	 Students in Honors or AP courses tended to be more engaged throughout. Students working in self-directed projects but who were given feedback frequently remained engaged. Approaches that included emphasis on student reflections seemed linked with high engagement.
	МОТ	 Work started too late in the year to engage classes of primarily seniors. Persistent interruptions to instructional time decreased momentum. The material / task type affected engagement. 	 Students were not used to tasks without clear-cut directions. Initially, students were not willing to do work without a grade. (Some teachers gave a participation grade to support investment.) After receiving feedback or being required to reflect, the students adapted and grew.

Note: At one school, half of the teachers tested their change idea in an AP or honors class. At the other school, one third of the teachers did. Teachers selected their AP classes for several reasons, including a belief that introducing change would be easier with students who are reliably more motivated. The overrepresentation of AP classes may limit the applicability of these findings. In future years, the SCAN Hub intentionally designed for teachers to focus on students who traditionally struggle in school.

Challenges with Student-Centered Formative Assessment

While most teachers saw positive results from their first attempt at using student-centered formative assessments, the learning curve was steep. In their reflections, teachers identified several common hurdles.

- Overcoming the focus on grades. Teachers struggled to nurture intrinsic motivation among students accustomed to grade-based systems and who, as a habit, made choices about where to exert effort based on how it would contribute to their grades alone.
- Scaffolding students' work habits and metacognitive skills. Several teachers noted that students' existing learning habits sometimes undermined their ability to succeed in more self-driven activities. Although several teachers discussed a desire for students to take more ownership of learning, they did not yet know how to scaffold instruction to foster greater autonomy and accountability.
- Changing practice in real time. The rapid turnaround of formative assessments was tough for teachers to manage. In some cases, time constraints made scoring exit slips or other forms of assessment challenging, so teachers were unable to act on the data to adapt instruction. In other cases, students missed deadlines, leaving teachers unable to respond in a meaningful way.

Utility of Improvement Science

The large majority of SCAN teachers said that learning how to use improvement science tools and methods was extremely or moderately beneficial. In interviews, teachers spoke about how the inquiry process helped them to be more reflective practitioners, in effect mirroring the same type of skills and habits they were trying to foster with students.



The PDSA cycle really mirrors
exactly what formative
assessment is all about
I absolutely appreciate this cycle.
It's working.

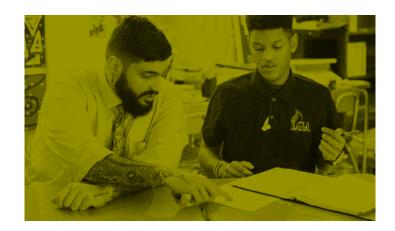
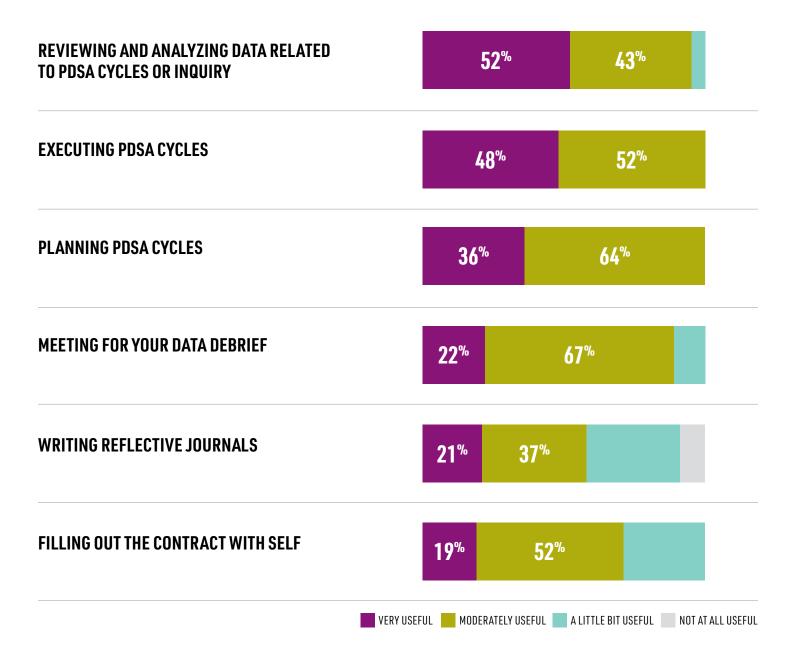


Figure 5: Teacher reported usefulness of network activities

Large shares of participants reported that network activities were useful



Challenges with Improvement Science

Teachers were somewhat less positive about the usefulness of three SCAN-developed inquiry tools: the contract with self, reflection journal, and data debrief (see Figure 5). This mixed feedback may stem from the challenges of integrating a new, complex process into their practice in real time. When asked to reflect on their biggest challenges with improvement science, teachers discussed three themes that are typical for those new to instructionally focused learning networks.

Balancing demands on time. Teachers found balancing their other professional duties with the demands of inquiry to be the most challenging aspect of the work. One area where this conflict became apparent was in their inquiry cycle documentation: approximately 40 percent of SCAN teachers exhibited low documentation effort (e.g., completing fewer than four logs, or giving brief or incomplete responses). Poor documentation effort does not necessarily reflect overall effort, but documentation is a critical part of the process. Many teachers might see the full set of steps in a PDSA cycle as an add-on to their teaching responsibilities and, thus, optional.

Aligning the inquiry workflow with the rhythm of the school year. The bulk of teachers' inquiry work fell in the spring, which tends to be the busiest and most unpredictable part of the school year. While the majority of teachers were positive about their initial inquiry cycle and many intended to continue the work beyond April, most did not continue implementing their change idea once the first inquiry cycle was over. Only a small number of teachers began a second inquiry cycle, which had originally been part of the designed work requirement for the pilot year. Typical school interruptions (e.g., snow days, fire drills, state testing, illness) were cited as barriers by many teachers. Teachers may not have experienced the same challenges had the first cycle (the period of steepest learning) occurred earlier in the school year. **Technical aspects of inquiry.** SCAN teachers also struggled with three technical aspects of inquiry that are common challenges for practitioners at this stage:

- 1. Selecting robust formative assessment practices to test. While the ability to select change ideas to test was a motivating feature of the network, the quality of the changes varied considerably. In a few cases, teachers spent a lot of time planning and implementing their ideas, then gathering and analyzing data only to find little to no impact. There was also variety in the scope of ideas: some were relatively simple and bounded (e.g., integrating exit slips at the end of class to assess student understanding), while others involved multiple shifts in how students engage in learning which proved difficult to assess. That said, the more complex and expansive changes often represented more transformational shifts in practice.
- 2. Designing quality measurements. Figuring out how to design, collect, and apply useable data to their practice was new territory for many teachers, especially those whose exposure to data was limited to results from standardized tests. For some, learning how to think differently about using new forms of data to inform instruction was intrinsically interesting. Others struggled to build measures that would provide meaningful feedback on whether the change was leading to improvement.
- 3. **Data collection and analysis.** A related challenge was learning how to integrate data collection and analysis in the daily rhythm of classroom instruction. While daily exit tickets provide substantial data, it can be time consuming to design meaningful exit tickets every day, grade them every night, analyze the data, and adjust instruction.

Refining the Network and Preparing for Scale

After a pilot experience with SCAN, many teachers saw the value of student-centered formative assessment and improvement science. Most teachers planned to continue the work into the second year. The network leaders, meanwhile, were ready to go deeper. They had made several decisions up front about which aspects of network development and professional learning to prioritize in the pilot phase and which to defer. As they moved into the first full year of implementation, network leaders were ready to leverage the trust built and teachers' initial experiences with inquiry to design for a more robust understanding of the network's content focus and methodology.

With these goals in mind—and in conversation with developmental evaluators and the Foundation—SCAN's leaders identified seven areas for augmenting the network for the 2018–19 school year.

Clarify expectations about network participation.
 To be more responsive to teachers' busy schedules and more transparent about network expectations, network leaders formalized a statement of roles

- and responsibilities for the implementation year after the pilot. They also revamped internal procedures to improve alignment within their leadership team and identified ways to work with designated school site leaders to periodically assess teacher participation.
- 2. Create a common understanding of student-centered formative assessment. As the pilot year concluded, SCAN teachers were at the beginning of their professional learning journey with student-centered formative assessment, and their understandings of what good practice looks like varied. For the first full year of implementation, network leaders developed a six-part framework to provide a clear, common definition of student-centered formative assessment. That framework would be integrated into the "contract with self" that kicks off each inquiry cycle, the data debrief protocol, and periodic data collection.
- 3. **Build expertise related to student-centered formative assessment.** Going into the second year,
 network leaders made plans to provide teachers



- with expanded opportunities to learn from experts and research on student-centered formative assessment. This would include in-person and online discussion of articles, mini-lessons during team meetings, and guest presentations at all-network convenings. As teachers' experience grows, meetings increasingly featured teacher-to-teacher sharing of effective practices.
- 4. Develop and share practical measures to support inquiry. In response to challenges identified in the pilot year, network leaders developed a guide to classroom measurement strategies that included examples of indicators, survey instruments, and self-assessment rubrics that align with varied learning objectives and foster engagement among a diverse array of students. They built an online portfolio of measurement tools for teachers to adopt or adapt for their own use.
- 5. Scaffold inquiry with refined tools and routines.
 Based on feedback from teachers, network
 leaders refined the design and execution of
 three key tools—the "contract with self" to kick
 off inquiry, weekly logs, and the data debrief—
 to make them more user-friendly for busy
 teachers and to continue to build teacher
 enthusiasm and engagement with the
 improvement science process.
- 6. Respond to teachers' desire for more collaboration. Network leaders have been exploring how to structure more opportunities for small groups of teachers to meet together, including through collaborative data debriefs and other online and in-person formats. Teachers are also considering how they could use common planning time to discuss SCAN pursuits, although aligning schedules and time demands will be a challenge.

7. Integrate a focus on equity throughout. Going forward, network leaders will build a more explicit focus on equity throughout network activities, particularly in helping teachers consider how student-centered formative assessment can honor each student's identity and learning needs by meeting them where they are and promoting authentic engagement with learning.



The work of the 23 SCAN teachers and network leaders in the pilot year laid the groundwork for this promising initiative. Their efforts affirmed the overall value of the work, while raising important discoveries and lessons that point to refinements going forward. As the network expands to include a third high school and a total of 48 teachers in the second year and potentially others in future years, network leaders are thinking ahead about how to accommodate differences in school culture, institutionalize routines for collaboration and continuous improvement at each site, disseminate best practices beyond the network, and differentiate roles for teachers as they become ready to take on leadership roles that will sustain the effort over time. In parallel with the network's commitment to increasing student ownership of learning, SCAN's leaders aim to build the agency of teacher members so that they are empowered to continuously improve the learning that occurs in their classrooms and to bring effective student-centered formative assessment practices to scale within their schools and districts.



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