Research Brief:

Learning to Improve: How America's Schools Can Get Better at Getting Better

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The introduction of the *Framework for Great Schools* provides educators with a valuable way to structure the essential elements of school improvement. Like any theoretical model, however, the *Framework*'s impact on schools and students depends on how it is used. In addition to its role in defining the *Framework*, research also offers valuable insight into how educators effectively apply new ideas to their practice. In order to strengthen the connection between the *Framework* and practice, this brief summarizes research into how schools can become more effective at learning and continuing to improve practice.

Improvement Research

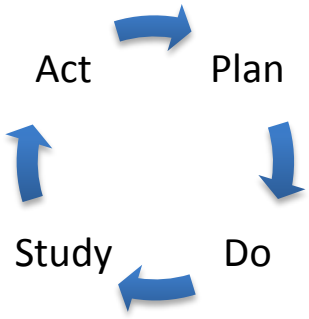
Over the past several decades, important developments from successful organizations across sectors have provided insight into how complex organizations learn to improve at what they do. These developments have spread to the education sector and enabled schools to leverage existing resources and modify existing work processes to accomplish ambitious improvement goals. The growing field of improvement science consolidates these lessons.

Improvement researchers work closely with organizations that apply these lessons, refining their theories as they guide practice. Researchers that focus on the specific characteristics and challenges of the school environment include Dr. Anthony Bryk and his colleagues. In their newly released book on improvement science and schools, *Learning to Improve: How America's Schools Can Get Better at Getting Better,* they tell the story of several groundbreaking organizations that use the principles of improvement science to successfully take on some of the most intractable challenges.

As New York City schools use the *Framework for Great Schools* to meet their individual goals, these lessons offer a process to guide school professionals in school improvement.

Improvement through Cycles of Inquiry[1]

At the heart of improvement science is an approach to learning by doing. In essence, it describes a form of practitioner-led inquiry called *Cycles of Inquiry*. These cycles are collective efforts by educators to use their firsthand experience with a problem to organize themselves to address it, learn from their results, and do better at the next attempt. As a concept, Cycles of Inquiry are simple, containing



[1] For clarity in New York City, the term *Cycle of Inquiry* has been adapted to *Cycle of Learning*, and the steps of the cycle are adapted to *Plan*, *Implement*, *Reflect, and Adjust*, and *Share Lessons Learned*. For more information on research into *Cycles of*

four steps: plan, do, study, and act. However, successful implementation in the face of complex problems requires a deeper understanding of the principles underlying improvement science.

In this book, Dr. Bryk and his fellow authors provide two important contributions: a detailed description of the six principles of improvement science, and numerous concrete examples from outside and within the education sector illustrating how these principles enabled their success.

The Example of Community College Pathways NIC

The backbone of the research shared in *Learning to Improve* is the story of a Networked Improvement Community (NIC)[2] that the authors helped lead. Drawing on their accumulated experience with improvement science, in 2010, Bryk et al. initiated a NIC of community colleges to address the problem of high failure rates of students in developmental mathematics courses. Each year, hundreds of thousands of community college students fail to clear this hurdle, preventing them from earning the college credits they need to work towards graduation or transfer to a four-year institution. Only 30–40% of students who enroll in developmental mathematics go on to complete the required sequence of courses.[3]

The results of this effort were impressive. After three years' work, the Community College Pathways (CCP) NIC had expanded to 50 schools; some participating schools had raised the proportion of their developmental math students to receive math credits within their first year to 50%. For perspective, the historic average is just 5%. Such dramatic change required close adherence to the principles of improvement science.

To get these results, the CCP went through many important steps. The first, **making the work problem-specific and user-centered**, allowed them to define the problem. Staff at every level of the 17 initially participating colleges was included in discussions about how to meet the stated goal of increasing graduation rates. This broad participation allowed the discussions to incorporate many relevant perspectives on why students fail to graduate. Together, the stakeholders identified developmental mathematics as their problem-focus because it was a key roadblock on the course to graduation.

Having defined the problem, the CCP worked toward understanding it more deeply. To find achievable paths towards improvement, they **focused on variation in performance** that already existed in their colleges. By analyzing different outcomes among similar students, they were able to work backward to uncover many factors that made a difference in supporting these students through developmental mathematics. For example, if one professor's students outperformed the average, the improvement efforts focused on understanding what the particular professor did differently; or if one college excelled, they would investigate differences in everything from student induction practices and counseling to professorial scheduling.

Inquiry, see page 121 of: Bryk, Anthony S., Louis M. Gomez, Alicia Grunow, and Paul G LeMahieu. *Learning to Improve: How America's Schools Can Get Better at Getting Better*. Cambridge, MA: Harvard Education Press, 2015.

[2] For further information about Networked Improvement Communities, see Bryk et al., (2015), pages 141–169.

[3] Bryk, A. S., L. M. Gomez, and A. Grunow. "Getting Ideas into Action: Building Networked Improvement Communities in Education." Carnegie Foundation for the Advancement of Teaching, Stanford, CA (2010), retrieved from http://archive.carnegiefoundation.org/pdfs/elibrary/bryk-gomez_building-nics-education.pdf.

Gradually, their efforts to understand the problem allowed them to **see the system that produces the current outcomes** and start theorizing ways to change it. They developed an appreciation for how all of the pieces of the problem interacted to contribute to the persistent high failure rates. Seeing the system in all its complexity prepared them to develop a theory of change and create "drivers" to address key aspects of the problem. A few high-leverage drivers such as improved faculty preparation, improved course content, building student language skills, and strengthening student persistence were chosen to address the problem.[4] This collective effort to describe the system not only developed common goals, but also created a common language among the diverse group of professionals as they worked toward a common aim.

As they moved through the Cycles of Inquiry from planning to implementation, the benefits of measurement became clear. The principle **we cannot improve at scale what we cannot measure** had been embedded in their work from the planning stage, and data was collected to verify the progress and impact of every driver of change. By planning the measures alongside the theory and drivers, the CCP staff was able to collect data that was valid for their questions and practical enough to collect. For example, as part of the effort to develop persistence in students, they designed an intervention to convince students to see themselves as other than "just not good at math." Alongside it, they designed survey questions that were sensitive enough to pick up degrees of change in self-image, while clear and short enough that the surveys would be consistently understood and completed. Measurements of progress were made for every driver of change to continually gauge progress.[5]

The aforementioned steps in the CCP's improvement efforts are all critical to building the foundation for what is at the heart of improvement science: **using disciplined inquiry to drive the improvement process**. Provided with tools such as a well-developed understanding of the problem, appropriate drivers, solid evidence, and community buy-in, the CCP was able to engage in rapid Cycles of Inquiry whereby the lessons from previous cycles sparked learning and improvement in subsequent ones. They made explicit predictions at the beginning of each cycle, and each time a change fell short of expectations they treated it not as a failure, but as an opportunity to learn and refine the working theory before trying again. Meanwhile, the involvement of the practitioners themselves in the process allowed for a rapid accumulation of practical knowledge that could be quickly applied and shared among colleagues.

While a large part of the process of disciplined inquiry took place at the local level, the CCP also had to deal with a scaling challenge that is common in education: the difficulty in sharing practical expertise with other professionals. While we can be confident that other educators have developed experience and know-how to address the problems we face, this knowledge is often individually developed and difficult to access by those who need it most. The CCP faced the particular challenge of sharing lessons among the 17 colleges (rising to 50 by the end of three years). If the barriers between practitioners within and across schools are overcome, the learning that happens across the system can be sped up substantially. To do this, the CCP worked to **accelerate learning through a Networked Community**. It took time to establish mutual trust and to settle on common drivers, practices, and measurement protocols, but this effort paid dividends. The NIC set the goal "to reclaim 10,000 students' mathematical lives," and collaborated and shared to this end. Progress made by one part of the NIC was spread and expanded on, driving improvement and learning across the network.[6]

[4] See Bryk et al., (2015), p. 74.
[5] See Bryk et al., (2015), p. 108.
[6] See Bryk et al., (2015), p. 151.

Lessons

The Community College Pathways NIC is not the only organization to achieve dramatic results by embracing improvement science. The authors were also involved in guiding the Building Teacher Effectiveness Network NIC in Baltimore Public Schools and chronicling the experiences of the National Writing Project, the Literacy Collaborative, Teach For America, and the Cincinnati Children's Hospital Medical Center, among others. The six principals of improvement research outlined here were pillars of these organizations' successes. As New York City schools look to apply the *Framework for Great Schools* to their unique contexts and goals, improvement science offers a process to guide their work.

The Six Improvement Principles

(From Bryk et al., (2015), p. 172)

1. ***Make the work problem-specific and user-centered.*** Quality improvement starts with a single question: "What specifically is the problem we are trying to solve?" Engage key participants as problem definers and problem solvers from the earliest phases of development through large-scale implementation.
2. ***Focus on variation in performance.*** A networked improvement community aims to advance efficacy reliably at scale. Identifying and addressing the sources of variability in outcomes is essential. Rather than documenting simply "what works," as in estimating an on-average effect, aim to learn "what works, for whom, and under what set of conditions." Develop the know-how to make innovations succeed for different students across varied educational contexts.
3. ***See the system that produces the current outcomes.*** It is hard to improve a system if you do not fully understand how it currently operates to produce its results. Seek to understand better how local conditions shape work processes and resulting outcomes. Use this analysis to explicate a working theory of improvement that can be tested against evidence and further developed from what is learned as you go.
4. ***We cannot improve at scale what we cannot measure.*** Measure outcomes, key drivers, and change ideas so you can continuously test the working theory and learn whether specific changes actually represent an improvement. Constantly ask: "Are the intended changes actually occurring? Do they link to changes in drivers and to desired system outcomes?" Anticipate and measure for unintended consequences too.
5. ***Use disciplined inquiry to drive improvement.*** Common inquiry protocols and standards for evidence guide the diverse efforts of NICs. Engage in systematic tests of change to learn fast, fail fast, and improve fast. Remember that failure is not a problem; *not* learning from failure is. Accumulate the practical knowledge that grows out of failure, and build on it systematically over time.
6. ***Accelerate learning through networked communities.*** NICs aim to break down silos of practice and research. They enliven a belief that we can accomplish more together than even the best of us can accomplish alone. A shared working theory, common measures, and communication mechanisms anchor collective problem solving. Organize as a NIC to innovate, test, and spread effective practices sooner and faster.

Additional Resources for the *Framework for Great Schools*

- A Vision for School Improvement: Applying the *Framework for Great Schools*
- Alignment across the NYCDOE: Linking Each Element of the *Framework for Great Schools* with NYCDOE Measures and Resources
- Research brief: *Organizing Schools to Improve: Lessons from Chicago*
- Guiding questions for schools