The equity consciousness in improvement science is essential and aims to identify institutional and instructional inequities that may be root causes to issues that surface in adult and student access and performance.

When I was a young boy going to the beach with my brother, we used to climb on rocks exploring new and strange things the ocean provided. We were fascinated to see what was under the next rock we uncovered.

Interestingly, we unearthed certain rocks and were shocked by the ugly worms that were nestled under them. My brother would yell at me: “Put the rock back and go look for something more interesting and beautiful!”

I use this childhood story to frontload this article about one of the new California educational methodologies that will be introduced to all county offices of education as differentiated assistance for districts that have not made adequate progress in at least two Local Control Funding Formula priorities. This continuous cycle is called improvement science.

Since 2008, the Carnegie Foundation has been working with school districts to implement improvement science as a means to learn how to use a continuous improvement cycle to solve problems in our schools. Improvement science is a methodology grounded in the essence of the medical model for generating solutions to health problems.

Improvement science methodology is strongly being recommended to California county office Local Control and Accountability Plan facilitators to guide districts in identifying problems of practice and dig deeper into multiple data sources to explore root causes for solving academic and behavior challenges in our schools.

The root cause analysis deeply explores “educational rocks” to unearth that might be lurking below the surface as educational problems.

This article aims to shed light on the new direction of professional development assistance for districts and schools to address worms/causes that prohibit the implementation of effective best practice and “scale up” healthy solutions to address problems of practice identified by data from the California School Dashboard.

Please pass the salt

My personal excitement in writing this article, stems from my engagement in facilitating the improvement science in our professional learning network through the California Collaborative for Educational Excellence (CCEE).

By Edwin Lou Jarvius
CCEE is a grant-funded initiative committed to addressing the achievement gap in California K-12 schools through implementing research-based practices of networks. As an equity leader, I am excited to have been asked to be one of the chefs in the kitchen developing the meal. Now I can add the Lawry’s or Tajin while the meal is being prepared to ensure equity is not a side dish or something we ask for after the meal has been prepared.

Facilitating the improvement science in our California Association of African American Superintendents and Administrators’ (CAAASA) network, the members and I are engaged in key learnings that will impact California districts eligible for differentiated assistance provided by county offices and other service providers. Equity principles underscore how equity consciousness and strategies will be essential drivers of the process.

Equity principles are not to be implied, but overt action. Due to inconsistency in defining equity, educational leaders may say, “equity is woven throughout the initiative,” with no distinct solutions to address the equity challenges that the Dashboard so colorfully highlights.

**Equity is a mindset**

In my study of the improvement science methodology, it is very evident that equity consciousness is the foundation of this continuous improvement cycle. An equity framework is based on 75 percent mindset and 25 percent instructional strategies (Javius).

Equity consciousness in improvement science aims to identify institutional and instructional inequities that may be root causes to adult and student access and performance. The Carnegie Foundation has identified six principles of improvement science that are the underpinnings of the methodology (see page 22). This continuous cycle of improvement is a powerful action to determine the evidence-based practices to solve problems in our K-12 system.

My learning in facilitating is there are four system thinking actions: habits, discipline, execution and reflection. Improvement science is not a rush to find a solution. “Hurry and fix it” activity is an ineffective habit. “Solutionitis,” is a discipline that causes educators to find a popular program or the newest fad to address an educational issue. As Doug Reeves indicated in “Closing the Implementation Gap,” educators tend to seek popular programs and not effective actions.

The purpose of improvement science is to find out more about a problem of practice. I equate it to going to the doctor. The doctor uses multiple data/information to know exactly what issue needs treatment. The execution of improvement science is the deep dive into multiple data sources to know more about the problem to effectively diagnose and prescribe the correct treatment through the plan-do-study-act cycle (Deming).

The use of the California School Dashboard will initiate warning signs, but the need to go deeper is the role of district and school assessments to pinpoint specific problems. The equity principle to the data dig is the need to disaggregate the data by many subgroups – race, gender, language, learning needs etc.

Noteworthy to the data dig, I have found that there are three tiers to analysis that...
Principles of improvement

The six principles of improvement science, according to the Carnegie Foundation for the Advancement of Teaching, are:

1. **Make the work problem-specific and user-centered.**
   It starts with a single question: “What specifically is the problem we are trying to solve?” It enlivens a co-development orientation: engage key participants early and often.

2. **Variation in performance is the core problem to address.**
   The critical issue is not what works, but rather what works for whom and under what set of conditions. Aim to advance efficacy reliably at scale.

3. **See the system that produces the current outcomes.**
   It is hard to improve what you do not fully understand. Go and see how local conditions shape work processes. Make your hypotheses for change public and clear.

4. **We cannot improve at scale what we cannot measure.**
   Embed measures of key outcomes and processes to track if change is an improvement. We intervene in complex organizations. Anticipate unintended consequences and measure these too.

5. **Anchor practice improvement in disciplined inquiry.**
   Engage rapid cycles of plan-do-study-act (PDSA) to learn fast, fail fast, and improve quickly. That failures may occur is not the problem; that we fail to learn from them is.

6. **Accelerate improvements through networked communities.**
   Embrace the wisdom of crowds. We can accomplish more together than even the best of us can accomplish alone.

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move the data from 30,000 feet to ground zero. Download the three-tier data dig process at https://goo.gl/6DXJ38.

Facilitating the three-tier data dig to examine the problem at a deeper level, the facilitator will inevitably unearth rocks with worms. The majority of the districts and schools that are faced with the Dashboard’s red and orange levels are due to the performance of specific subgroups. Students of color and students with learning disabilities make up more than 85 percent of the two lowest performance levels.

Digging deep into the data to determine root causes to educational challenges for students of color will cause most teachers to experience some level of anxiety. In my experience of facilitating educational equity for more than 15 years, creating a “psychological safe space” is needed for all participants to understand the impact of race and culture as an equity principle to explore the worms of teacher expectations and implicit bias as a root cause in the data dig.

If a psychological safe space is not cultivated, solutionitis will infiltrate the improvement science process.

**Root cause protocol**

The discipline, execution and reflection of improvement science is most evident in determining the root causes of a problem. Knowing more about the problem is key to better identify effective solutions. I urge the facilitator of the improvement science to cultivate discipline and patience during the root cause analysis. If not, opinion-driven sentiments will begin to flow.

To guide the root cause analysis, improvement science uses three protocols to support facilitators and participants: fishbone diagram, empathy interview and process map. Empathy interview is a data gathering process using qualitative data, rather than test scores, as a means to identify root cause. The fishbone diagram summarizes group understanding of the cause of the problem being solved.

The root cause analysis protocols allow the group to dig deeper under the rocks to determine antecedents to the problem. For example, if we seek to better understand disproportionality in discipline of Latino male students, the fishbone diagram allows the group to visualize the problem from various perspectives to understand the problem in more depth.

Empathy interview captures qualitative data from various stakeholders that may impact the problem and influence the solution. The interview is the opportunity to learn from the interviewee what they know about the problem and how they might solve the problem.

Equity principles are most prominent during the empathy interview because the interview questions can be designed specifically to unearth how the interviewee is personally impacted by the problem.

When we interview students, we are able to explore relationships with educators and their perception of being a student of color. Other stakeholders we interview include teachers, administrators, parents and district leadership.

Despite other means to capture more information about the problem, the process map can be used to explore how systems impact the identified problem of practice. The process maps are graphical representations of the steps, decision points and links between systems that come together to produce a particular outcome.

This process can provide valuable insights of strengths and gaps within current system workflow. It is very important in improvement science methodology to be diligent in deeply analyzing systems. If we locate “institutional worms,” we must be courageous enough to clean them out and possibly throw the rock away.

LCAP, Dashboard, CAASPP and district benchmark assessments are only the start of determining root cause to some of our educational problems. Many problems in education are caused by our inability to identify and take action on inequities that prohibit traditional practices and marginalize students from demonstrating their brilliance.

**Continuous cycle and PLC**

Upon determining an aim or problem of practice, the group is poised to conduct the continuous cycle of improvement. The recommended improvement cycle is Deming’s plan-do-study-act.

The PDSA cycle is sometimes misunder-
stood by the group. The purpose of the cycle is to test the treatment of a problem using formative data assessments to determine if a measurable goal is attained. The PDSA is equated to the medical model of taking medication (instructional strategy) for two to three weeks and reflecting through formative data to determine if the medicine is the appropriate treatment for the illness.

The equity principles in the PDSA make sure the group uses disaggregated data – racial, language, gender etc. – to assist in solving the problem. I cannot underscore enough that disaggregated data is not meant to make teachers uneasy if it indicates a particular racial group is not getting better. The data is used to explore what we know about the group and how we can revise the “do” in plan-do-study-act.

Noteworthy to point out, the PDSA gets very loose when the group doesn’t study the data within a two- to three-week cycle. Poorly loose collaborative (PLC) groups tend to wait for district benchmarks on a six- to nine-week cycle before they test the medicine. That makes it very difficult to determine if the strategy had an effect on the problem.

The means to support districts through the improvement science will need to have an overt equity focus – not implied. The age-old challenges that plague the performance of California schools may need chefs that can make amazing meals with cultural seasonings (Lawry’s and Tajin) that infuse equity. Moreover, the facilitators of the improvement science must be courageous enough to address the worms under the rocks.

Resources

- Deming Institute PDSA: https://deming.org/explore/p-d-s-a.

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