**Ten Essential Mindsets for Tilling the Soil for the**

**Common Core State Standards for Mathematics**

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We are approaching the halfway point on the rollout of the Common Core State Standards for Mathematics. They were released in June, 2010 and the first round of PARCC and Smarter Balanced Assessments arrive in the Spring of 2015. That means it is time to begin accepting the fact that these new standards are real and coming soon; they are not another fad, nor likely to disappear anytime soon. That is why it is time to move beyond building awareness and familiarity, and toward a set of critical mindsets that support the emerging implementation of these new standards.

For those still wary, here is my best justification for why these standards are game changers and represent a long overdue shifting of the foundation of school mathematics: For as long as most of us can remember, the K-12 mathematics program in the U.S. has been aptly characterized in many rather uncomplimentary ways: underperforming, incoherent, fragmented, poorly aligned, unteachable, unfair, narrow in focus, skill-based, and, of course, “a mile wide and an inch deep.” Most teachers are well aware that there have been far too many objectives for each grade or course, few of them rigorous or conceptually oriented, and too many of them misplaced as we ram far too much computation down too many throats with far too little success. It’s not a pretty picture and helps to explain why so many teachers and students have been set up to fail and why we’ve created the need for so much of the intervention that test results seem to require.

But hope and change have arrived! Like the long awaited cavalry, the new *Common Core State Standards for Mathematics* (CCSSM) presents us with a once in a lifetime opportunity to rescue ourselves and our students from the myriad curriculum problems we’ve faced for years.

It’s not just a math radical like me making this argument. Look at what Checker Finn of the rather conservative Fordham Foundation says: “Supporters of the Common Core, ourselves included, peer out across this vast nation and see a hodge-podge of standards, tests, textbooks, curriculum guides, lesson plans – little of it of high quality or particularly “innovative” (with much of the “innovative stuff” being faddish and silly) and none of it aligned with much else in any meaningful sense. We look with some envy at other countries that can boast curricular “coherence” – a clear vision of what students should know and be able to do, a reasonable plan for getting teachers trained to impart it, and rich materials to help students and teachers reach the Promised Land. Attaining consensus of the standards and the assessments – the core part of the Common Core’s work – is a huge leap forward.”

That’s why I argue that we must adopt and promulgate a set of mindsets that support these changes. But what exactly is a mindset and why are shifting them so critical? The dictionary defines a mindset as the *ideas* and *attitudes* with which a person *approaches a situation*, especially when these are seen as being difficult to alter. In decision theory and general systems theory, a mindset is a set of *assumptions, methods or notations* held by one or more people or groups of people which is so established that it creates a powerful incentive within these people or groups to continue to *adopt or accept prior behaviors, choices, or tools*.

Carol Dweck, the author of the insightful and popular book *Mindsets* suggests that: “In a fixed mindset, people believe their basic qualities, like their intelligence or talent, are simply fixed traits. They spend their time documenting their intelligence or talent instead of developing them. They also believe that talent alone creates success—without effort. They’re wrong. However, in a growth mindset, people believe that their most basic abilities can be developed through dedication and hard work—brains and talent are just the starting point. This view creates a love of learning and a resilience that is essential for great accomplishment. Virtually all great people have had these qualities.” This notion of a growth mindset should guide every teacher in thinking about themselves as professionals and about the work with their students.

So what exactly are the mindsets that enable us to till the soil to allow the CCSSM to take root and flourish?

**1: The Efficacy Mindset.** Efficacy is the belief that one has the capacity for producing a desired result or effect. A teacher with an efficacy mindset asks, “If not me, who?” He or she feels that “Sure we all have a role to play, but I can take the lead” or “I have the knowledge, skills, commitment and courage to make a difference.” Contrast these beliefs with the common lament that “Most of the people I work with either can’t or won’t provide the necessary leadership to support the implementation of the Common Core.” Then remember: “That is why I have to provide the leadership that nurtures the capacity in others.”

When I read the following four sentences from page 5 of the CCSSM, I am consistently reminded of what it means to have efficacy. “These Standards are not intended to be new names for old ways of doing business. They are a call to take the next step. It is time for states to work together to build on lessons learned from two decades of standards based reforms. It is time to recognize that standards are not just promises to our children, *but promises we intend to keep*.”

**2: The Urgency Mindset.**  It is hard to argue with the proposition that this is truly a once-in-a-lifetime opportunity and we can’t afford to get it wrong or screw it up. But the sad reality is that all of our experience tells us that this too will pass. This time, however, things have to be different. Just look at what we profess: To make math work for *all* students. To ensure that every student leaves high school college and career ready. But look at what we know to be true: What we profess can’t happen with the existing curriculum. It can’t happen with existing instructional practices. It can’t happen with existing instructional materials. It can’t happen with existing tests. And it can’t happen with the existing degree of professional isolation.

But that is the hope of the CCSSM. Finally, a curriculum that is fairer, more coherent and more teachable. Finally, instructional practices that balance what students need to know and understand. Finally, more focused and better aligned instruction materials. And finally, a set of high-quality, computer-delivered PARCC and Smarter Balanced assessments that are aligned with the curriculum. That is, a systemic approach akin to what is found in Singapore instead of more tweaking at the margins. That’s why the CCSSM is a brave-new-world game changer if only we can pull it off and why there needs to be a sense of urgency.

**3: It Takes Time Mindset.** Look at the natural progression of change and the stages of implementing an innovation: awareness, familiarity, understanding, initial forays, partial implementation, institutionalization. And look at how rarely we have ever been given *five* years to get it right. Consider how close you, your school, your district and your state are to a rollout timetable close to:

* 2010-11: A year of comprehensive planning (clarifying what needs to be done when)
* 2011-12: A year of study (analyzing crosswalks, curricular implications, policy shifts)
* 2012-13: A year of piloting and collaborative discussions
* 2013-14: A year of curriculum and policy implementation and an assessment moratorium
* 2014-15: A year of accountable implementation

**4: It’s the MATH Mindset.** It is important to remind ourselves again how the CCSSM are different. First, they are “fewer.” Unlike the days of 37 and 45 objectives per year, the Common Core has pared things back to about 30 standards of varying bite-size per grade. Second, with embedded examples, they are clearer, but more detailed than most previous standards. Third, they are fairer as a result of more rational grade placement of procedures and algorithms. Fourth, the NCTM processes have been replaced with a set of key mathematical practices. Fifth, at grades K-8, the standards are based on research-based and coherent learning progressions. Sixth, these progressions or learning trajectories represent spirals of expanding radius with less repetitiveness and less redundancy. Seventh, the standards provide a sequence that results in all students reaching rational algebra (not to be confused with Algebra I) in 8th grade. In other words, these new standards package the mathematics our students need to master in new and better ways. The math mindset requires that every teacher of mathematics develops a clear sense of four key understandings:

* Exactly which and what proportion of the CCSSM are fully and/or partially matched by existing standards at that grade – that is, what is essentially the same or superficially the same, but deeper;
* Exactly which and what proportion of the CCSSM are fully and/or partially matched by existing standards at a different grade – that is, what has to be moved;
* Exactly which and what proportion of the CCSSM are not matched by existing standards at any grade – that is, what is new content; and
* Exactly which current state standards for any grade or course get moved to a different grade or are no longer expected to be taught.

The math mindset is operationalized when you have thought about and implemented or developed such activities as:

* Grade level or course seminars or discussions about what is new, for example, tape diagrams or double number lines, *a* replications of 1/*b* of a whole, statistics and modeling;
* Cross walks that compare existing standards to the Common Core; and
* Discussions about the mathematical connections within and between standards and across progressions.

**5: It’s INSTRUCTION Silly Mindset.** The instruction mindset begins with the key understanding that standards don’t teach, teachers teach. That is, it’s the translation of the words into tasks and instruction and assessments that really matter. The instruction mindset understands that processes are often as important as content and that we need to give our students, as well as ourselves, a reason to care.

Additionally, the instruction mindset recognizes that students *forget* and that is why we need to more deliberately review; students see it *differently* which is why we need to accommodate multiple representations; students *approach it differently,* so we need to elicit, value and celebrate alternative approaches; students give *ridiculous answers* and therefore we need to focus on number sense and estimation; students don’t understand the *vocabulary* which is why we need to build language rich classrooms; and students ask *why do we need to know this* requiring us to embed the math in contexts.

But how do we know a teacher of mathematics gets it and is providing opportunities for students to learn? First we hear frequent use of the following questions to create a classroom culture of justification and explanation: Why? Can you explain your thinking? How do you know? Can you convince us? Can you show us? How did you picture it? Who did it differently?

Second there are frequent opportunities for students to critique the reasoning of other students based on seeking out alternative approaches (both correct and incorrect). Third, there is frequent use of such open-ended questions as: Tell the class what you see here. What else do people see? Can you convince us that the answer is correct? Fourth there is explicit attention to new terms and vocabulary that uses pictures, examples and a word wall. Fifth, we see daily use of ongoing cumulative review warm-up problems to review and diagnose. And sixth, we see daily use of exit slips to provide formative assessment of the success of every day’s lesson.

The instruction mindset is operationalized when you have thought about and implemented or developed such activities as:

* Developing a common vision of effective teaching and learning mathematics that incorporates the elements discussed above;
* Intensive work with principals about effective instruction and how to nurture and cultivate it widely;
* Fighting for the deployment of mathematics coaches;
* Demanding structured and informal opportunities for professional collaboration; and
* Making extensive use of classroom observations and video of lessons.

**6: The Coaching Mindset.** Visit some of the most effective schools in any district or state with me. One finds formal or informal coaching. Experienced teachers mentor new teachers. It is not uncommon for colleagues to observe colleagues teaching and then debrief these observations. There are frequent discussions about what worked, what did not work, and what adjustments might be made. Coaches co-plan and co-teach with, and critique the work of, colleagues. Teacher leaders orchestrate collaborative reviews of videotaped lessons and lead seminars around common readings. The debilitating professional isolation of most teachers does not exist. Instead, there is a common spirit of “We’re all in this together,” a respectful ethos of transparency, and a culture of professional sharing orchestrated by teacher leaders and coaches.

An effective mathematics coach observes and asks and then debriefs around the questions:

* Was there opportunity for the students to learn? Why and why not?
* What evidence was there that the mathematics was in fact learned?
* What worked and was worthy of praise?
* What didn’t work and why?
* What opportunities were missed?
* What growth nugget can I end with or leave with the teacher?

Until and unless we ask and try to answer these questions on a regular and collaborative basis, it is unlikely we’ll be able to effectively implement the CCSSM. That is why a shift toward a mindset that coaches can help is so vital. Effective coaches provide expert guidance and direction. They provide support and flak interference. They serve as co-teacher, co-planner, co-assessor and as demonstrator/modeled. They are observer, complimenter and critique, and they serve as convener and organizer of professional interaction among teachers. The magnitude of the challenge of implementing the vision of the CCSSM is a perfect opportunity to advocate for effective, trained math coaches at all levels.

**7: The Collaboration Mindset.** When I started teaching back in 1971 I could reasonably be expected to do it all. I had three textbooks, two walls of blackboards, a couple of erasers, lots of chalk, a couple of boxes of ditto masters and an overhead projector with a pull down screen. With such meager resources and so little pressure to have all students learn math, who needed to collaborate?

Look at what we face today. A slew of textbooks, a wealth of videos and websites, applets galore, blogs, document cameras, LCD projects, amazingly powerful calculators, instant response clickers and interactive white boards. The simple fact is that no one can do it all and we *must* collaborate if we are to be effective.

The collaboration mindset understands that:

* Professional development/interaction that is situated in practice and built around “samples of authentic practice”;
* Professional development/interaction that employs materials taken from real classrooms and provide opportunities for critique, inquiry, and investigation; and
* Professional development/interaction that focuses on the “work of teaching” and is drawn from mathematical tasks episodes of teaching, and illuminations of students’ thinking.

The collaboration mindset doesn’t use limited time as an excuse but seeks out such opportunities as structured and focused department meetings, before school breakfast sessions, common planning time (by grade and by department), after school fruit and cheese sessions, released time 1 p.m. to 4 p.m. sessions, hiring substitutes to release teachers for classroom visits, coaches or principals teaching one or more classes to free up teacher to visit colleagues, after school sessions with teacher who visited, teacher who was visited and the principal and/or coach to debrief, and department seminars.

When we collaborate, the interaction is the means for individual and collective growth, not the end. That is why a collaborative mindset finds teachers engaged in video analysis of lesson, analysis of student work, development and review of common finals and unit assessments, discussions about what the data tell us, sessions on “what’s not working?” and why, and policy analysis discussions, e.g. grading, placement, requirements, promotion, grouping practices, course options, etc.

In short, it is not a PLC that magically makes a difference. It’s the content of, and follow-up and change that emerge from, the professional sharing and interaction that enhances the day-in-and-day-out opportunities for kids to learn mathematics!

**8: The Intervention Mindset.** It is one thing to profess that mathematics should work for *all* students and quite another to pull it off. We know that students will fall behind. Others will arrive with deficiencies and some are absent for long periods of time. We also know that the range of knowledge and experiences among students arriving in Kindergarten is gigantic. We know that if students leave third grade without a sense of place value, a reasonable command of facts and an understanding of adding and subtracting, they often never catch up. Similarly, since we can’t “fix” students every year, we know that 6th and 9th grades, when most students enter middle school and high school are also key periods where we level the playing field or widen gaps. An intervention mindset posits that some students, particularly at grades K, 3, 6 and 9 need more time, the best teachers, and the highest quality instructional practices. An intervention mindset recognizes that some students simply need more in order to success and an intervention mindset ensures that such instruction is provided to all who need it.

**9: The Infrastructure Mindset.**  It is mystery to me how and why we produce content standards for mathematics and process standards or standards for mathematical practice, but time and again stop short of developing *standards for effective implementation*  that address the infrastructure within which mathematics is taught. A set of Standards for Effective Implementation, promulgated at the state and/or district levels, might include:

* Quality opportunities for all teachers of math to understand the implications of the CCSSM for changes in curriculum, instruction and assessment.
* A shared vision of effective teaching and learning that is aligned with the mathematical practices.
* An annotated video library of effective teaching of the standards.
* Adequate time and structures for collaboration.
* Adequate technological tools to enhance the teaching of mathematics.
* Aligned materials with a sensible pacing guide.
* Aligned benchmark or interim assessments.

**10: The Risk-taking Mindset.** While “nothing ventured, nothing gained” is such an apt aphorism for so much of life, “nothing risked, nothing failed” is a much more accurate descriptor of what we do in school. We cannot change without taking risks, yet taking risks in our traditionally risk averse school cultures is the exception. Alternatively, it is time to follow in the footsteps of the heroes about whom we so proudly teach, and take some risks to better serve our students.

**Mindsets for Tilling the Soil**

**#1: Efficacy – You can do it!**

**#2: Urgency – It needs to be done now!**

**#3: Time – It takes time. A lot of time!**

**#4: Mathematics – Never forget the content!**

**#5: Instruction – The heart of the matter always!**

**#6: Coaching – All great artists and athletes….**

**#7: Collaboration – Impossible to do alone**

**#8: Intervention – Not everyone falls into step**

**#9: Infrastructure – System elements are key**

**#10: Risk-taking – What leaders do to be a leader!**

In summary, we know only too well that:

* People won’t do what they can’t *envision*,
* People can’t do what they don’t *understand*,
* People can’t do well what isn’t *practiced*,
* But practice without *feedback* results in little change, and
* Work without *collaboration* is not sustaining.

It follows that our job, as professionals and as leaders, at its core, is to help our colleagues envision, understand, practice, receive feedback and collaborate around the letter and the spirit of the Common Core State Standards for Mathematics with the support of the ten mindsets outlined above.