What It Will Take to Improve Evidence-Informed Decision-Making in Schools

By Eric Kalenze   June 2020

Key Points

- The education enterprise struggles to get evidence-supported practices and programs operating in schools and classrooms.
- Three factors are contributing to this reality: (1) a limited understanding of evidence-supported practices at the practitioner level, (2) the centralized selection of (sometimes evidence-weak) improvement strategies, and (3) the researcher-practitioner divide.
- Dropping bridges between education's research and practice sectors, enhancing school-improvement planning with various evidence-review processes, and minting "learning engineers" are just a few practical, feasible ways to improve evidence-informed decision-making in schools.

In recent decades, American education has thrown all kinds of stuff at its various stuck needles: advanced technologies, standardized measurements of performance, tightened accountabilities, expanded school options, and so forth. No matter what gets pitched at those needles, however, precious few even budge.

I have spent the past 15 years or so of my career fairly obsessed with the question of what we are still not getting right. And based on my experience and study, the answer is simply *evidence*. For all that the education field buys and sets into motion, its improvements are still missing evidence.

More specifically, the education enterprise struggles to get truly evidence-supported practices and programs operating in schools and classrooms. Until the field does more to account for this reality, we will likely not see much positive movement in student outcomes. Measuring student learning more accurately, holding professionals more accountable, and strategically planning improvements are of course all important. None of those things, however, will move much closer to the vision of equitable student outcomes if education's practitioners do not know about—or flat-out refuse to use—the instructional practices and programs research tells us are most likely to work.

Make no mistake: I am fully aware of how touchy it can be to talk about what "works" in education. In over two decades working as a teacher, administrator, independent researcher, and consultant, I have been in many conversations with other education professionals about the idea of evidence-based practices. If there is a spirited take on research's reliability, questionable methodologies, the importance of context, schools' inability to implement properly, or whatever

else, I have probably heard it. I understand how messy it is.

The plain fact, though, is that some instructional practices and programs have more evidence to support their implementation than others do. Instructional practices and programs based on evidence from cognitive science, for instance, simply have higher chances of driving successful learning. They are designed expressly according to what decades of clinical trials have shown us about how humans learn and develop.

Relatedly, some practices and programs have more evidence of having worked elsewhere to support them than others do, at both micro levels (practices and programs used in classrooms where students are making the largest gains) and macro levels (achievement data across entire systems).

Still, I will not over-reduce the matter by saying that just "plugging in" practices and programs recommended by these evidence bases will guarantee huge student gains. Effective implementation is crucial, and successful implementation in schools could be covered in another whole report. But just as stock market investors study the best possible evidence before knowing where to put their money, so, too, should educators use sound evidence about how people learn and what has worked elsewhere as they select which practices and programs to implement.

And *that* is education's evidence problem: The enterprise's practitioners and decision makers rarely and ineffectively consult cognitive-scientific or precedential evidence bases when choosing which practices and programs to invest in. Indeed, the education field tends toward practices and programs that are intuitively pleasing (differentiating instruction according to individuals' learning styles, for example) and innovative (leveraging technology to fully "personalize" learning) but that have little or no evidence—from either cognitive science or sheer precedence—to justify their selection.[1]

To put it another way (and to borrow from renowned educators Douglas Carnine and the late Jeanne Chall, respectively): The fact that the education field has "less respect for evidence than for opinion and ideology" too often causes educators to choose practices and programs that move "in a direction opposite from the existing research

evidence."[2] It is not a particularly responsible tendency, either, considering that the enterprise's time, money, and angst are finite—and, of course, that each student passing through the K–12 system gets only one chance to receive an education that will prepare them for the world. All moments spent getting better at things that *might* work, or at things that feel intuitively *right*, are not moments spent getting better at what evidence *suggests will have a higher likelihood* of working. Again, think of an investor who follows his or her gut and does not research the market before putting forward some amount of cash: When it is lost, you cannot get it back.[3]

With all this in mind, getting evidence-supported practices and programs into classrooms will not be easy. US education has a long way to go on this score and many challenges to work through. The remainder of this report will discuss some specific issues US education must address to build research and evidence more productively into its decision-making processes, as well as suggested actions to get us started.

To give a better idea of just where decision-making breaks down when not informed by research and evidence, I start with the steps an actual school today would likely use to plan its improvement strategies. This brief look, informed by my own work with US schools, will shed some light on (1) how schools commonly determine their improvement priorities and (2) how schools commonly use evidence ineffectively (or neglect it altogether) when planning improvement actions. And it will provide an illustrative landmark I can return to when discussing challenges and recommendations.

Inside Current Schools' Improvement Planning

As the work of improvement scientists and efficiency experts moves into education from fields such as health care and manufacturing, schools and districts are becoming considerably more strategic and focused with their achievement data.[4] Increasingly, in fact, districts are requiring their schools to conduct constructed continuous school improvement–planning processes. A large majority of US states seems primed to make such a standard opera-

Figure 1. The Public Education Leadership Project's Problem-Solving Approach to Strategy Design and Implementation
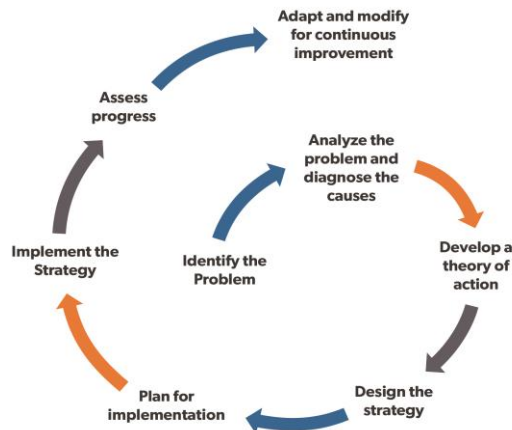
Source: Stacey Childress, "A Problem-Solving Approach to Designing a Strategy to Improve Performance," Harvard University, Public Education Leadership Project, April 24, 2017, pelp.fas.harvard.edu/files/hbs-test/files/pel083p2.pdf.

tion: 2018's initial review of Every Student Succeeds Act (ESSA) improvement plans showed states everywhere pledging (if vaguely, in some cases) to become better data-driven decision makers.[5]

While these improvement-planning processes differ from one to the next, they commonly begin with some sort of needs assessment: teams of school stakeholders sifting through various performance and climate data and, after structured consideration and discussion, landing on "root causes"—the fundamental, underlying reasons driving unacceptable data points on the surface. (Example root causes might include "too many of our students miss too many school days per year to stay on grade level" or "too few of our students read to grade-level standard by the third grade.") Leadership teams then build upward from their determined root cause to construct a "theory of action"—an "if-then" statement aiming appropriate actions directly at the problematic root cause.[6] (For a sample of this type of decision-making process, see Figure 1.)

And it is here, in the decisions about theories of action, that evidence-poor decision-making knocks productive school-improvement processes fully off their rails. Both up close and at a distance, I have seen schools (and indeed, entire districts) identify their root causes fairly well and then choose actions that have little positive evidence to support them.

While piles of sound research exist about how humans develop and which actions have the best chances of systematically supporting such development, schools do not often consult the research when building their theories of action. Rather, they enact practices that are innovative, trendy, and just intuitively pleasing. Just a quick flyover of the past decade or so of American education reveals a long list of such decisions: solutions such as interactive whiteboards, standards-based grading, restorative practices, one-to-one digital devices, growth-mindset interventions, and others are accepted as promising investments practically out of hand, whether they have been proven to transform student learning elsewhere or not.

Even worse, absent strong attention to evidence, such investments set an inevitable cycle into motion: Millions of dollars are spent on professional development, infrastructure, and materials to mobilize chosen improvements; the promised great shifts in student results do not materialize; theoreticians blame the low return on investment on all manners of "flawed implementation," such as recalcitrant staff and inadequate funding; and decision makers move to still the *next* innovative or intuitively attractive solution. Rinse, wash, repeat.

Three Issues Limiting Informed Decision-Making by Educators

This evidence-unbothered tendency—which can elude even the most deliberate and careful improvement-planning processes—is most certainly frustrating, but it is far from educators' fault alone. Multiple issues overlap, actually, to block research and evidence from better informing schools' selection of effective programs, practices, and products. The issues have built up over generations of American education, and, while a full

analysis is likely too complex for this report, three issues are particularly crucial to acknowledge and address here.

Issue #1: Limited Understanding of Evidence-Supported Practices at the Practitioner Level. When ESSA's "Using Evidence to Strengthen Educational Investments" guidance was released in 2016, it explicitly brought evidence into the school-improvement process. In the guidance document's steps to promote continuous improvement, in fact, step two is "Select Relevant, Evidence-Based Interventions."[7] (See Figure 2.)

Compared to other commonly used continuous improvement processes (such as the Public Education Leadership Project's problem-solving process, in which theories of action are built from "what do we think" questions over "what does the evidence say" questions), the ESSA guidance should be considered a giant leap forward for evidence.

It will not be as simple, however, as instructing all continuous-improvement planners to "add evidence here." It *cannot* be that simple, actually, as US educators just do not know enough about what works and why to just add evidence. Due to the field's initial and continuing professional training, education's practitioner level has a remarkably thin understanding of both the science of learning and evidence-supported practices.[8]

An interesting illustration of this assertion appeared in the past year thanks to an audio documentary by American Public Media's Emily Hanford and the hubbub that followed. In *Why Aren't Kids Being Taught to Read?* Hanford clearly explained how reading tends to be taught unscientifically across US elementary schools, including why teachers prefer the flawed methods they do.[9] This was not news to many, as teacher-prep critics and reading researchers have been saying the same for years.[10] The incredulous and even embarrassed reactions from career teachers on social media and elsewhere, however, confirmed that some fairly

Figure 2. Steps for Promoting Continuous Improvement
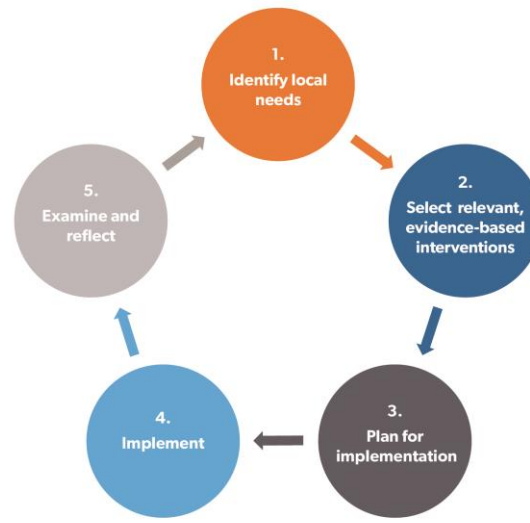
Source: US Department of Education, "Non-Regulatory Guidance: Using Evidence to Strengthen Education Investments," September 16, 2016, https://www2.ed.gov/policy/elsec/leg/essa/guidanceuseseinvestment.pdf.

necessary stuff is not included in teachers' initial and ongoing training.[11]

Lacking such crucial foundations (and at times even believing that *scientifically unsupported approaches are ideal* based on their training), the improvement strategies educators choose often lack sound evidence. Current instructional materials and approaches are too rarely interrogated, as they match educators' trained-in ideals and senses of quality. And in instances when results do not materialize as promised, educators seeking new strategies default toward the sentimental, innovative, and more highly student-centered approaches.

These student-centered ideas constitute most of educators' continuing professional development, and they have hardened into a loop that has become fairly impenetrable over time. Indeed, ideas with strong cognitive-scientific evidence bases (e.g., the importance of explicit phonics instruction for developing readers, effective reading comprehension's reliance on background knowledge, and the role of deliberate and repeated practice in building expertise) have a tough time getting *in front of* teachers, much less properly taught and moved into practice, simply because they run counter to truths long considered self-evident by the education establishment.

Figure 3. Proficiency Rates of Minneapolis Public Schools Third Graders on the Minnesota Comprehensive Assessment of Reading

Source: Author's calculations.

Issue #2: Centralized Selection of (Sometimes Evidence-Weak) Improvement Strategies. Accepting the issue above, imagine a school where it is not actually an issue—where all classrooms are staffed with the most research-literate and evidence-informed practitioners imaginable. Because they know their research, they will build perfect school improvements, right? Not necessarily.

Schools operate within larger entities, after all. And if the strategies preferred and required by a district or state lack a strong justifying evidence base or are not well-thought-out, individual schools' strategies will be evidence weak or disorganized by extension. Worse, the district- and state-imposed strategies take up so much infrastructure that site-determined improvements may not receive the maintenance they require.

In other words: If a school's district goes all in on a one-to-one iPad initiative or an entire state adopts a proficiency-based grading system, each school in those jurisdictions is responsible for site-level implementation. Whether the iPads or grading systems best address those schools' actual student needs or not, additional staffing may be necessary to coordinate implementation, professional development time will be necessary to train staff, and

administrative time will be necessary to keep things on track. This all leaves little time, funding, and energy for other improvements.

To illustrate, take a look at Minneapolis Public Schools, a district I have worked a lot with in recent years. In the portfolio of schools I worked with (which, due to their chronic low performance, were state-designated "focus" and "priority" schools), it was quite common for school leaders to assign improvement actions toward literacy instruction.

In general, though, this did not mean they were free to audit and possibly replace the practices and resources that clearly had not been moving their kids. Rather, their school-improvement plans explicitly cordoned off professional development time and space for the district to help them better execute the district-preferred literacy approach. (In early grades, this was—and is—the balanced literacy approach.)

Although trend data over nearly a decade should call into question balanced literacy as the best approach for all early readers in Minneapolis (see Figure 3), the district's leadership was firm: Schools are not to deviate from this approach; they are supposed to *get better at doing it*.[12] In effect, the

district denied its most struggling schools the opportunity to explore effective replacement practices—even in some schools that, thanks to federal School Improvement Grant dollars, could have afforded to do so. Every hour and dollar they put toward improving the district's preferred (but evidence-shaky) approach was an hour or dollar they could have spent learning and refining more evidence-sturdy ones.

This is one district's example, and it is limited to a specific academic category. All US schools in "transformational, system-changing" districts or state education departments, however, give up large parts of their improvement infrastructure and decision-making to enable their districts' and states' preferred programs and practices, *even* if those preferred programs and practices are themselves weakly supported by multiple sources.

On the question of why promising practices and programs are not adopted, top-down imposition of practices and programs is a large part of the answer.

Issue #3: Research on Islands, Practitioners on Mainland. As I said earlier, it is a good thing that US education's policy level has picked up on evidence-informed decision-making. Positively, the US Department of Education's Institute of Education Sciences (IES) and its Regional Education Laboratory Program (and other non-government-affiliated providers) are producing solid—if not yet perfect—resources for helping educators access research more quickly and conveniently.[13]

Not so positively, however, these educational research and evidence resources are still too far removed from the world of practice. It is rather like they are concentrated on remote islands, and all education practitioners are on the mainland. (Interestingly, teachers around the country pretty much told IES the same thing in recent listening sessions: Eye-popping numbers of teachers had never *heard* of resources such as IES's What Works Clearinghouse and Regional Educational Laboratories.[14])

As I have said, getting education to make better evidence-informed decisions is going to take a lot more than dropping "add evidence here" directions into improvement-planning processes, sitting back, and waiting. Indeed, active guidance and assistance will be needed to move educators *toward* the resources.

No matter how conveniently the education research community packages its research and evidence resources, education's practice community will continue defaulting to existing knowledge bases and preferences and the sometimes flawed directives of their districts and states without protest if it is not made much clearer how and where to find the convenient resources.

So researchers, you are on the clock. Strong, highly visible bridges—including lots of guides to help practitioners across—are needed and fast. If these bridges and assistance cannot be provided fairly soon, it is probably just a matter of time until practitioners stop looking out to sea altogether, turning instead back to the mainland.

Toward More Evidence-Informed Educational Decisions: The Big Aspiration and Three Actions

The big aspiration and three actions that conclude this report are presented as places to start. While many actions could be set in motion to improve schools' and systems' evidence-supported decision-making, it is crucial that they all aim to strengthen the research literacy of the field's practitioners and leaders.

The Big Aspiration: Strengthen Research Literacy of All Education Practitioners and Leaders. Flatly, strengthening research literacy across the education field has to be a primary target and guide. Some may shake this aspiration off, arguing that schools and districts are not designed to retrain their entire teaching and leadership forces in the relevant cognitive-scientific and "what works" practical literature. Others may challenge that building research literacy across the field's practitioners is even the right aspiration: Is it better to just find practices and programs that are proven to work and then ensure that practitioners are making the methods come to life in their classrooms? Still others may believe that strengthening research literacy falls in the domain of preprofessional training and accordingly turn to reforming schools of education, the gateway through which almost all educators must pass.

They are all fair points, for sure, but all seem to neglect what the term "research literacy" even *is*.

Elevating research literacy, after all, does not necessarily mean making all educators experts with the educational research literature. More so, it means *building practitioners' and leaders' skills to evaluate claims* made by vendors, education "futurists," other educators, or whomever so they can make the best instructional decisions possible for their kids' needs.

While retraining the entire education field to become deeply expert in the available literature would indeed be next to impossible, training the field to be more effective and evidence-guided claim evaluators is not. Functional grasps of these claim-evaluating skills can absolutely be taught and practiced, as the principles are quite straightforward. (The more challenging part, of course, is *where* and *how* these skills can be taught and practiced. Read on for some specific actions to meet these challenges.)

And if our ultimate goal is to get evidence-supported practices and programs fully working in schools, we will need all the research-literate skill we can get. These elevated levels of research literacy will help teachers, schools, and districts choose practices and programs that genuinely account for their kids' learning needs (where their specific kids are now), kids' preparatory needs (what they will need to succeed in the future), and what science has told us about how people learn (the common things that make us all work).

Additionally, elevated research literacy across the field will help all education decision makers distinguish good science from bad when setting priorities, selecting actions, and monitoring progress at system levels. Imagine how much time, money, angst, and student potential would be saved if even a few more voices, informed by evidence, rose to challenge a district on its literacy programming, its intent to roll out an as-yet-unproven (but cool) digital learning initiative, or its requirements that teachers differentiate lessons according to students' learning styles.

Again, when resources are finite (as education's are), we must go with options that give us the best odds of success when aiming at a particular improvement target. Only evidence can tell us what those options are, and only we can parse the available evidence.

Therefore, we must strengthen our ability to parse evidence, as widely across the enterprise as we can. Plainly, too much opportunity is being lost. We cannot just task schools of education with producing new teachers who are more research literate, as newly minted teachers make up only a tiny fraction of the overall practitioner force.[15] Nor can we hold out hope that more practitioners will find their own ways to becoming more research literate. Rather, we should find systematic ways to accelerate research literacy across the field.

On that note, let us segue from this overarching aspiration to consider some actions that can aid this acceleration. While many more beyond these can certainly be imagined and brought to life, the three suggested here would provide considerable positive momentum.

Action #1: Upgrade—or Construct—Bridges Between Research and Practice. In my earlier discussion of issues that must be addressed if truly evidence-supported practices and programs are to make their way into schools, I mentioned that bridges are effectively out between education's research and practice communities. Even federally provided research resources, such as IES (and its What Works Clearinghouse, Regional Education Labs, and National Center for Education Statistics), are all but invisible to most educators, indicating that either their formats are not sufficiently user-friendly, their perceived value is not high enough, or both.[16] Education's research community (and policymakers) can improve this by better understanding practitioners' realities and needs, continuing to adjust their resources accordingly, and marketing their services more effectively.

One way forward may be to partner with organizations such as researchED, Deans for Impact, and the Reading League. These entities and others like them have emerged in recent years to help educators make more evidence-supported instructional decisions, connecting them to sound research and a worldwide network of fellow learners.[17] The networks of research-interested educators growing around each organization could help IES get in touch with the practice community more quickly

than they ever could if they were starting from scratch.

Action #2: Strengthening Continuous Improvement Processes with Evidence. If the pledges written into dozens of states' ESSA plans are any indication, schools and districts all across the US will be working hard to become better data-driven decision makers in the years to come.[18] Influential supporters, such as the Bill & Melinda Gates Foundation, are even pitching in to see how these processes can be maximized moving ahead.[19]

This sweeping commitment to carrying out sound continuous-improvement processes presents a massive opportunity to elevate scores of educators' research literacy. (As a bonus, of course, the current continuous-improvement moment carries great potential for bringing evidence analysis into schools' improvement-planning processes— the place where practices and programming are determined.)

More specifically, problem-solving processes could be enhanced to make them useful for not just strategically planning improvement but also *teaching* research literacy to practitioners and leaders. Guidance, templates, and protocols could walk leaders through the process of using evidence to vet prospective improvement actions, just as current continuous-improvement processes walk leaders through needs assessments and root-cause analyses.[20]

While ESSA's "Using Evidence" guidance (see endnote 7 and Figure 3) is a laudable step forward on this score, it is hardly an *applaudable* one yet. This guidance effectively tells leaders to "add evidence here" when significantly more facilitation is needed. If current documentation were expanded, however, and schools' teams could receive training, technical support (perhaps from dedicated personnel such as the "learning engineers" or "research leads" recommended below) and fresh ideas about looking at research in school-improvement planning could be disseminated and internalized quite rapidly.

As so many schools, districts, and states have committed to carrying out thorough continuous-improvement processes, US education has a huge opportunity to immediately usher leaders toward better evidence-informed choices for their schools

and permanently build those leaders' research literacy skills and sensibilities.

Action #3: Formalizing Research Capacity in Schools and Districts. Whereas "data people" are common in US school districts (usually in departments such as research, evaluation, and assessment), the time is now to make genuinely "educational research people" formal parts of central administrative—and better yet, *school*-level administrative—fabrics.

Rather than continuing as education has for so long (i.e., deciding based on "what is available" as much as "what is best," making "instructional leadership" a small percentage of already overburdened administrators' responsibilities, etc.), individuals with expertise and dedicated time could well be more productive. Bror Saxberg, the Chan Zuckerberg Initiative's vice president of learning science, has for several years expressed a similar need for such individuals closer to education's front lines:

> learning engineers [in other words, people] who are deliberately trained and focused on designing and systematically improving learning environments at scale in measurable ways . . . [who] make use of the current and new science of how learning and motivation work, and . . . [who] collect careful measurements, but the focus is on improving success and impact at scale, within constraints (economic, regulatory, practical), not research per se.[21]

More than just curriculum and materials shoppers, these dedicated "learning engineers" or "research leads"[22] could be tasked with all manners of schools' and districts' research- and evidence-based improvement work. A position description might include the following:

- Audit current programming and practices;

- Recommend changes to programming and practices based on audit and sound evidence from research literature;

- Observe teachers and provide evidence-sound improvements to practices;

- Coach teachers as necessary;

- Design and deliver professional development;

- Coach teachers' job-embedded, professional development teams on effective use of data, research, and evidence in instructional planning; and

- Inform school-wide continuous improvement processes and decisions.

This is a rough list, but it raises the question: Who currently does these things in schools or at district levels? How many dollars per year are spent on ensuring schools and districts are staying within evidence-informed guardrails?

If the answers are "no one" and "no dollars per year" (and I am pretty sure they are), well, you get what you pay for.

Rescuing Opportunity

To repeat one final time, getting evidence-supported practices and programs into classrooms certainly will not be easy. Many systemic factors—from educators' initial training to districts' top-down influence—are standing in the way, and they are difficult to move.

Luckily for US education, the need to be more evidence informed in our choices of practices and programs has been recognized, and interest for the idea is most certainly swelling. While we should always aspire to a consistently research-literate field, we certainly do not have to wait or wish for it. Rather, we can seize on this moment—and usefully bridge research-provided evidence straight into educators' daily realities—with some rather straightforward operational steps. Dropping sturdy bridges between education's research and practice sectors, enhancing school-improvement planning with various evidence-review processes, and minting "learning engineers" offer just a few practical, feasible ways to do so.

We should get right on bringing these ideas and others like them to life in American schools. The education enterprise's tendency away from truly evidence-supported practices and programs has cost us enough opportunity as it is.

About the Author

Eric Kalenze is an educator, author, and the US director of researchED, a grassroots organization committed to improving educators' research literacy.

Notes

1. Regarding the two examples provided above: Learning styles have never been shown to exist in any meaningful or actionable way, and personalized learning, despite all the recent enthusiasm surrounding it, has no serious record of transforming results. For more on learning styles, see Harold Pashler et al., "Learning Styles: Concepts and Evidence," *Psychological Science in the Public Interest* 9, no. 3 (2008): 105–19, https://journals.sagepub.com/doi/full/10.1111/j.1539-6053.2009.01038.x. For more on the lack of evidence to support personalized learning, see Benjamin Herold, "Personalized Learning: Modest Gains, Big Challenges, RAND Study Finds," *Education Week*, July 11, 2017, blogs.edweek.org/edweek/DigitalEducation/2017/07/personalized_learning_research_implementation_RAND.html.

2. Douglas Carnine, "Why Education Experts Resist Effective Practices (and What It Would Take to Make Education More Like Medicine)," Thomas B. Fordham Foundation, April 2000, 10, www.wrightslaw.com/info/teach.profession.carnine.pdf; and Jeanne S. Chall, *The Academic Achievement Challenge: What Really Works in the Classroom?* (New York: Guilford Press, 2000), 180.

3. This is, of course, the concept of *opportunity cost*—a crucial idea to keep in mind, considering the highly finite nature of schooling. For a series of thoughtful pieces on opportunity cost in education, see David Didau, "Opportunity Cost," Learning Spy, learningspy.co.uk/tag/opportunity-cost/.

4. Carnegie Foundation for the Advancement of Teaching has emerged as a leader in educational improvement science. For more on its basic tenets, see Carnegie Foundation for the Advancement of Teaching, "The Six Core Principles of Improvement," www.carnegiefoundation.org/our-ideas/six-core-principles-improvement/.

5. Alyson Klein, "'Continuous Improvement' Model Woven into State ESSA Plans," *Education Week*, May 8, 2018, www.edweek.org/ew/articles/2018/05/07/continuous-improvement-model-woven-into-state-essa.html.

6. The terms used here are from the Public Education Leadership Project's "Problem-Solving Approach to Strategy Design and Implementation," an improvement-planning process I have seen used in several schools I have worked with. For more, see Stacey

Childress, "A Problem-Solving Approach to Designing a Strategy to Improve Performance," Harvard University, Public Education Leadership Project, April 24, 2017, pelp.fas.harvard.edu/files/hbs-test/files/pel083p2.pdf. As defined by the Public Education Leadership Project, a theory of change (action) is "the organization's belief about the relationships between certain actions and desired outcomes, often phrased as an 'if . . . then . . .' statement. This theory links the mission of increased performance for all students to the strategy the organization will use to achieve that goal."

7. US Department of Education, "Non-Regulatory Guidance: Using Evidence to Strengthen Education Investments," September 16, 2016, ed.gov/policy/elsec/leg/essa/guidanceuseseinvestment.pdf.

8. For a useful starting point on this idea, see Kate Walsh, "What Teacher Candidates Won't Find in Their Textbooks," National Council on Teacher Quality, January 2016, https://www.nctq.org/blog/What-teacher-candidates-wont-find-in-their-textbooks----.

9. Emily Hanford, "Hard Words: Why Aren't Kids Being Taught to Read," APM Reports, September 10, 2018, https://www.apmreports.org/story/2018/09/10/hard-words-why-american-kids-arent-being-taught-to-read.

10. The National Council on Teacher Quality (NCTQ) issues periodic reports that point out what is taught and where across US teacher-preparation programs. For NCTQ's most recent Teacher Prep Review, in 2018, see Robert Rickenbrode et al., *2018 Teacher Prep Review*, April 2018, https://www.nctq.org/dmsView/2018_Teacher_Prep_Review_733174. For information on early reading instruction, see Rickenbrode, *2018 Teacher Prep Review*, 18–20. While several reading researchers going back decades could be cited here, a particularly thorough and valuable example appears here: Mark S. Seidenberg, "The Two Cultures of Science and Education," in *Language at the Speed of Sight: How We Read, Why So Many Can't, and What Can Be Done About It* (New York: Basic Books, 2017), 247–81.

11. Madeline Will, "Teachers Criticize Their Colleges of Ed. for Not Preparing Them to Teach Reading," *Education Week*, October 24, 2018, blogs.edweek.org/edweek/teacherbeat/2018/10/teacher_prep_programs_reading.html.

12. Again, decades of work from reading researchers should also call this into question. As I have already referred to reading researchers' take on balanced literacy in this report, I will leave them aside for now and assume that Minneapolis' (and many others') teaching and learning specialists are not familiar with or interested in their viewpoints. Results from Minneapolis Public Schools' third graders on the state reading test between 2011 and 2018 are grouped by the district's five highest and lowest socioeconomic status schools. Demographic information accessed at Minneapolis Public Schools, "Meal Eligibility at MN DOE," October 1, 2018, https://studentaccounting.mpls.k12.mn.us/uploads/fall_2018_meal_eligiblity_official.pdf.

13. Regional Educational Laboratory Program, "The Regional Educational Laboratory Program: About Us," https://ies.ed.gov/ncee/edlabs/about/; and David B. Malouf and Juliana M. Taymans, "Anatomy of an Evidence Base," *Educational Researcher* 45, no. 8 (2016): 454–59, https://journals.sagepub.com/doi/abs/10.3102/0013189X16678417?journalCode=edra.

14. Sarah D. Sparks, "Teachers Want Education Research. The Feds Spend Millions on It. So Why Can't It Get to the Classroom?," *Education Week*, November 27, 2018, http://blogs.edweek.org/edweek/inside-school-research/2018/11/get_teachers_research_on_education.html.

15. That said, this is absolutely an improvement worth pursuing. As its impact is more incremental and long term, however, discussion should be saved for another report altogether.

16. Sparks, "Teachers Want Education Research."

17. I am researchED's US ambassador, arranging all its US conferences and operations. ResearchED is a grassroots education-improvement movement seeking to strengthen the research literacy of educators. It began in the UK in 2013.

18. Klein, "'Continuous Improvement' Model Woven into State ESSA Plans."

19. Carolyn Phenicie, "Fixing Struggling Schools Is Hard. Moving Past Quick Fixes and Focusing on 'Continuous Improvement' Is Key, Gates Grantees Say," 74, July 16, 2019, http://www.the74million.org/article/fixing-struggling-schools-is-hard-moving-past-quick-fixes-and-focusing-on-continuous-improvement-is-key-gates-grantees-say/.

20. For a model of matters to consider when choosing educational actions and interventions, see cognitive scientist Daniel Willingham's step-by-step process for evaluating vendors' claims in Daniel Willingham, *When Can You Trust the Experts: How to Tell Good Science from Bad in Education* (San Francisco, CA: Jossey-Bass, 2012), 135–222.

21. Bror Saxberg, "For White House Symposium on the Future of Education R&D and Digital Learning: Learning Engineers in Education," Bror's Blog, October 11, 2016, https://brorsblog.typepad.com/brors-blog/2016/10/for-white-house-symposium-on-the-future-of-education-rd-and-digital-learning-learning-engineers-in-e.html.

22. For more on the role of the school research lead, a position that has grown in the UK alongside the popularity of researchED, see Tom Bennett, *The School Research Lead*, Education Development Trust and researchED, http://www.educationdevelopmenttrust.com/EducationDevelopmentTrust/files/93/93c332a4-40df-41ac-8a9b-f803c6573d10.pdf.