

# IMPLEMENTATION SCIENCE: CHANGING HEARTS, MINDS, BEHAVIOR, AND SYSTEMS TO IMPROVE EDUCATIONAL OUTCOMES

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“Good ideas and missionary zeal are sometimes enough to change the thinking and actions of individuals; they are rarely, if ever, effective in changing complicated organizations (like the school) with traditions, dynamics, and goals of their own.” ~ Seymour Sarason, 1971, p. 213

## INTRODUCTION AND BACKGROUND

In the United States, many attempts to make use of data and to embrace evidence-based innovations in education have met with limited success (Wallace, Blase, Fixsen, & Naoom, 2008). Yet the push toward encouraging or even requiring the use of “evidence-based,” or at least “best evidence,” in instruction, intervention, and technical assistance at state and federal levels continues (Westat, Chapin Hall Center for Children & James Bell Associates, 2002; O’Donoghue, 2002; Pennucci & Lemon, 2014; U.S. Department of Education, 2015). The intention and hope are that more evidence-based—or, at minimum, evidence-informed—approaches to education can play an important role in significantly improving student outcomes. Nationally, for the past few decades, student outcomes have hovered around a mediocre mean without appreciable gains in reading and math, as documented by the National Center for Education Statistics (NCES, 2011).

Thus, the need for evidence-based approaches to education has never been clearer. However, the pathway to using evidence-based innovations and significantly improving student outcomes is fraught with potholes, detours, and U-turns. Efforts to embrace evidence-based and evidence-informed practices, like other reform efforts, often are abandoned (Bryce et al., 2010; Glennan, Bodilly, Galegher, & Kerr, 2004). New programs and practices or the use of a new

curriculum often ends prematurely and often with disappointing outcomes. What follows is a return to “education as usual” or the enthusiastic introduction of the next “silver bullet” (Adelman & Taylor, 2003; Fixsen, Blase, Duda, Naoom, & Van Dyke, 2010).

While data are necessary for productive change, frequently data are not sufficient to prompt the adoption of innovations, nor are data sufficient to create and sustain changes in practice in classrooms and schools (Carnine, 2000). For example, Project Follow Through was one of the most extensive and best funded evaluation studies in education. It compared the basic, academic, and cognitive outcomes of a number of “constructivist” models to explicit or direct instruction approaches for teaching at-risk children from kindergarten through third grade. In every category on the Metropolitan Achievement Test Scores, direct teaching of academics showed better results in math, language, spelling, and reading (Glennan et al., 2004). Yet the Department of Education’s Joint Dissemination Review Panel recommended all the programs for dissemination to school districts, declaring that “a program could be judged effective if it had a positive impact on individuals other than students.” Watkins (1995) noted that as a result of the panel’s judgment, “programs that had failed to improve academic achievement in Follow Through were rated as ‘exemplary and effective.’”

Education is not alone when it comes to evidence-grounded innovations withering on the vine. For example, medicine has had its share of failures to improve practice in the face of persuasive data. It took 25 years following the publication of data linking medical x-rays on pregnant women with fetal damage and childhood cancer until x-rays during pregnancy and early childhood were curtailed (Stewart, Webb, Giles, & Hewitt, 1956). Similarly, early data on the benefits of hand washing in preventing puerperal fever during childbirth were not published until 14 years after the data were collected, and even then the medical establishment actively rejected the practice for nearly two decades (Best & Neuhauser, 2004). And recent data show that hand washing occurs only one third to one half as often as it should (Gawande, 2004).

Ensuring that hand washing occurs seems straightforward compared with efforts to improve education. Soap dispensers don’t decide not to show up in the operating room, have competing demands, or resist engaging in the intervention. And the persons washing their hands do not have to respond to the soap in different ways based on the antiseptic’s engagement with them. The implementation of hand washing draws attention to the complex change required in more dynamic settings where the exchanges required are transactional and multilevel. That is, teachers influence students, who in turn influence their teachers; administrators influence teachers and teachers influence other teachers, and so on. It is no wonder that evidence is not enough.

If evidence is not enough, what else is required? Clearly, there are significant challenges related to choosing, implementing, sustaining, and improving evidence-based approaches to academic

instruction and interventions. This paper broadly frames those challenges by integrating two key considerations: the need to address both technical and adaptive challenges, and the need to engage in active, effective implementation strategies.

First, there is the need to recognize that the challenges related to practice, organization, and system changes are both *technical and adaptive* (Heifetz, 1994). Technical challenges, while complicated and formidable, are well defined, generally agreed upon, and able to be addressed with current strategies and often with traditional top-down leadership. The term “adaptive” refers to challenges that require revising and rethinking values, beliefs, and current ways of work. They are likely to generate feelings of loss, grief, disloyalty, and incompetence. Adaptive challenges also trigger legitimate but competing agendas for which solutions are not likely to be found by relying on mandates, to-do lists, and project management plans. In fact, tried-and-true solutions are not necessarily at hand (Heifetz & Laurie, 1997), and the very act of attempting to address such challenges often causes the very nature of the problem to change (Rittel & Webber, 1973). The shifting nature of the problem occurs because frequently, the attempted solutions create new and unforeseen problems. Of course, purely technical and purely adaptive challenges are rare. Often one flows into or generates the other. That is, a technical challenge can precipitate adaptive issues as progress becomes difficult and stalls. Similarly, adaptive challenges not only require addressing divergent perspectives and engaging in new learning but also must lead to action plans (technical approaches) or risk having progress stall in a never-ending process loop.

This frame of adaptive and technical challenges is an apt one since it draws attention to the challenges in education resulting from a lack of clarity and/or consensus about the definition of the problem and therefore the potential solutions. In addition, systemic, scientific solutions are often suspect in terms of historical and preferred educational pedagogy. The education ‘system’ is characterized by diverse opinions about diverse teaching methods, mixed with a penchant for autonomy at every level (classroom, curriculum domain, school, school district) and a passion for local determination. The United States, with its history of and propensity for individualism and exceptionalism, is the quintessential “you are not the boss of me” culture. For example, even when years of collective effort by educators, researchers, stakeholders, and policy makers result in presumed consensus about academic standards (e.g., the Common Core Standards), the drive in many states to tailor, brand, or totally discard the standards reflects a system driven by pedagogy, exceptionalism, and individualism (e.g., “Our children are different,” “We don’t agree; nobody asked us,” “The government can’t tell us what to do,” and “The standards aren’t developmentally appropriate”). Adaptive challenges can emerge from attempts to engage in more technical work and are not resolved so much as they re-solved iteratively. Large-scale, sustained change in education certainly has all the conditions necessary for generating adaptive challenges.

Improving student outcomes requires not only engaging the hearts and minds of educators and stakeholders by addressing adaptive challenges, but also changing the actions and behavior patterns of teachers, administrators, professional development providers, and policy makers (e.g., instructional practices, administrative supports and routines, policy guidance), and getting involved in system change. This calls for using the best evidence related to implementation. In the context of this paper, implementation refers to specific, observable actions and methods associated with reliably using evidence-based programs to benefit students in typical education

*“Tra il dire e il fare c'è di mezzo il mare.” - “Between the saying and the doing is the sea.”*

settings (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). Of the many attempts to “use” evidence-based and evidence-informed practices, programs, and innovations, few actually result in “implementing” with fidelity, sustainability, and positive outcomes.

Purposeful attention to implementation requires using *evidence-based and evidence-informed implementation strategies and frameworks* to improve teachers’ and administrators’ confidence and competence, to create hospitable organization and system environments for new ways of work, and to engage in the right leadership approach for the diverse challenges encountered in any change process (technical and/or adaptive). In short, attention to implementation science acknowledges that improved education will require attention to two outcomes: implementation outcomes and intervention outcomes. Implementation outcomes focus on changes in teacher and staff behavior as well as changes in the organization and system environment (e.g., administrative guidelines, policy, funding) in order to support better ways of educating students. Student outcomes that are educationally and socially significant must be preceded by implementation outcomes; students cannot benefit from evidence-based instruction they do not receive.

## SETTING THE CONTEXT

Improved student academic and social-emotional outcomes are worthy goals. And the process for achieving these goals is complex and messy, as the Italian proverb “Between the saying and the doing is the sea” reminds us.

What do we know about changing classroom practices and instruction, organizations, culture, and policy in pursuit of better student outcomes? What do we know about creating and supporting change at multiple levels when there are legitimate but competing agendas, pedagogies, and practices?

This paper examines these two questions in light of what we know about using implementation science and about the nature of adaptive challenges. Given the relatively nascent nature of implementation science and best practices and the data related to leadership and adaptive challenges and strategies, we readily acknowledge that this approach to the change process requires further study, debate, and testing in typical educational settings.

The remainder of this article expands on implementation science and best practices through the lens of the five active implementation frameworks. The frameworks are based on implementation research and evaluation studies synthesized in the monograph *Implementation Research: A Synthesis of the Literature* (Fixsen et al., 2005). Each framework is briefly reviewed along with the hypothesized interaction with adaptive challenges and adaptive strategies and the benefits of implementation with fidelity to produce reliable student outcomes and sustainable interventions.

Creating change in classrooms, schools, districts, and states is a nonlinear, multilevel, multiyear, iterative process. Unfortunately, sentences are laid down linearly. So, of necessity, each framework is discussed individually followed by reflections on its contributions to fidelity, outcomes, sustainability, and the amelioration or exacerbation of adaptive challenges. Although the frameworks are interactive, let's begin with a brief definition of each.

## BRIEF DEFINITIONS OF THE FIVE ACTIVE IMPLEMENTATION FRAMEWORKS

### USABLE INTERVENTIONS

To be usable, an innovation must not only demonstrate the feasibility of improving outcomes, but it also must be well operationalized so that it is teachable, learnable, doable, and able to be assessed in classrooms and schools (Fixsen, Blase, Metz, & Van Dyke, 2013).

### IMPLEMENTATION STAGES

Implementation is a process that occurs over time, and stages of implementation require thinking through the right activities for each stage to increase the likelihood of success. The stages are exploration, installation, initial implementation, and full implementation (Felner et al., 2001; Fixsen et al., 2005).

### IMPLEMENTATION DRIVERS

Implementation drivers are key components of the infrastructure and capacity that influence the successful use of an innovation. There are three implementation driver domains: competency drivers, organization drivers, and leadership drivers. Within each of these three domains, specific implementation-informed processes are detailed. These processes can be used to improve staff competence and confidence, create organizations and systems that

enable the innovation to be sustained and used with fidelity, establish processes that actively use data to manage change, and utilize leadership strategies that are appropriate for complex change challenges (Blase, Van Dyke, Fixsen, & Bailey, 2012).

### IMPROVEMENT CYCLES

Improvement cycles are iterative processes by which improvements are made and problems solved. Whether they are used for rapid-cycle problem solving, early testing of new ways of work, or improving alignment in systems, they are based on the plan-do-study-act (PDSA) cycle. Each of these processes is detailed later in the paper. The PDSA process is derived from industrial improvement and quality control efforts (Deming, 1986; Shewhart, 1931) and is the foundation of improvement science in health and human services (Onyett, Rees, Borrill, Shapiro, & Boldison, 2009).

### IMPLEMENTATION TEAMS

Implementation teams (typically comprised of a minimum of three to five people) are accountable for planning and seeing the implementation process through to full implementation. They actively integrate implementation stages, implementation drivers, and improvement cycles in service of implementing, sustaining, and sometimes scaling up usable interventions, leading to improved student outcomes.

## BROAD APPROACHES TO ADAPTIVE CHALLENGES

Next, let's review the differences between adaptive and technical challenges and then summarize recommended approaches for addressing adaptive challenges.

Heifetz, Grashow, and Linsky (2009) observed that *technical challenges* may be very complex and important to solve but can be addressed by present-day knowledge, authoritative expertise, and current organization structures and processes. In contrast, the distinguishing features of *adaptive challenges* include lack of clear agreement on the definition of the challenge, and solutions that are unlikely to be found in the present-day knowledge base and current ways of work. Requiring changes in people's beliefs, habits, and loyalties is a messy process. And new learning is required while acknowledging and dealing with feelings of loss and incompetence. As noted previously, change initiatives are always a mix of technical and adaptive challenges. However, as Heifetz and Laurie (1997) noted, one of the biggest mistakes is to treat an adaptive challenge with a technical approach. In their classic paper *The Work of Leadership*, published in the Harvard Business Review, they summarized these six broad approaches to addressing adaptive challenges:

- *Getting on the balcony.* This requires stepping up onto the metaphorical balcony to survey the broader context and relevant history, patterns, data, emerging themes, and processes. The ability to be involved in the work while observing it more broadly is viewed as a prerequisite for the remaining strategies. The danger is in becoming mired in the day-to-day efforts and failing to identify broader leverage points for change as well as adaptive challenges.
- *Identifying adaptive challenges.* Diagnosing, identifying, and naming adaptive challenges are accomplished by gathering information and recognizing points of conflict that may be proxies for differing norms and values. And in some instances, leadership also must recognize that it has contributed to creating the adaptive challenges that now must be resolved.
- *Regulating distress.* In short, regulating distress requires pacing and sequencing the change and setting priorities. The goal is a continuing sense of urgency that does not overwhelm the people doing the work.
- *Maintaining disciplined attention.* In many aspects, this is a corollary to *regulating distress*. One way of avoiding tension is to return to comfortable methods of work, even when they do not result in the desired outcomes. The key to forward movement is recognizing work avoidance and redirecting energies back to the difficult work at hand.
- *Giving the work back to the people.* This approach involves creating conditions to let groups and individuals take the initiative in addressing challenges. It is a shift away from a hierarchical system of leaders leading and others taking direction and following. This means rewarding risk taking, engaging in trial and learning, and encouraging meaningful participation in defining challenges and proposing solutions.
- *Protecting all voices.* Sometimes the most insightful perspectives are provided in discomforting ways. When people are mustering the courage to speak their truth and perhaps offer critical insights, they may not always choose the right time and place to do so. Or they may cover their anxiety by speaking so fervently that *how* they are communicating gets in the way of *what* they are trying to say. It is necessary to hear all voices and continue to focus on what is being said while helping to regulate how issues are being communicated.

## IMPLEMENTATION FRAMEWORKS: SUPPORTING CHANGE AND ADDRESSING ADAPTIVE CHALLENGES

Keep in mind the brief definitions of the five active implementation frameworks (AIF) and the overview of adaptive and technical challenges as we bring these two constructs together and

discuss how AIF supports sound implementation and how it can help address or, in some cases, aggravate adaptive challenges.

The hypothesis is that the use of AIF keeps the change process moving forward while surfacing and dealing with difficult issues. In essence, the frameworks provide pathways for addressing the challenging problems that might otherwise be avoided or exacerbated. As noted earlier, the frameworks provide processes, tools, and approaches for executing the broad plan and are not a linear set of steps. The collective use of AIF aligns with planning for emergent adaptive challenges.. As Heifitz et al. (2009, p. 31) noted, “You need a plan, but you also need freedom to deviate from the plan as new discoveries emerge, as conditions change, and as new forms of resistance arise.”

#### USABLE INTERVENTIONS AND ADAPTIVE CHALLENGES

As the evidence-based movement has swept through education and other human services, a great deal of attention has been paid to experimental rigor and effect size, as evidenced by more than 500 reviews of interventions by the What Works Clearinghouse and meta-analytic work by John Hattie (2009). Indeed, the rigor and evidence behind interventions are important. Research and evaluation findings help to *identify* what might be helpful for addressing the particular needs of students to improve specific outcomes. While rigorous research is important, it’s worth noting that teachers and administrators don’t implement experimental rigor. They implement programs and practices in typical educational settings.

Fixsen et al. (2005, p. 5) defined implementation as “a specified set of activities designed to put into practice an activity or program of known dimensions.” This definition directs attention to an important characteristic of a program or practice: *known dimensions*. Vernez, Karam, Mariano, & DeMartini (2006) noted that poorly defined programs are an impediment to effectively employing evidence-based practices or evidence-informed innovations and achieving good outcomes. Knowing the core components and having them operationalized well are key to supporting changes in the behavior of teachers and school administrators (Blase & Fixsen, 2013). In short, to be usable a program or practice must not only be effective, but it must be specific enough so that it is teachable, learnable, and doable, and can be observed and assessed in classrooms and schools (Fixsen et al., 2013).

Usable innovation criteria include the following:

- Clear description of the innovation (for whom it is intended, philosophy, procedures).
- Clarity about the essential functions or core components that define the innovation.
- Operational definitions of essential functions (what teachers and staff say and do).



- Practical fidelity processes/performance assessments that measure teacher behavior and instructional practices (answering the question, are we doing what we said we would do?).

Addressing each of the above criteria can variously exacerbate or ameliorate the adaptive challenges associated with identifying, selecting, and operationalizing innovations. As an innovation becomes more usable and clarity is developed regarding the philosophy, procedures, functions, and observable practices and processes, teachers and staff are better able to assess



how their current practices match up with the proposed innovation. Feelings of grief, loss, disloyalty, and incompetence may be more pronounced if the innovation diverges significantly from the current methods used to instruct and support students. The process of defining the intervention will produce the fodder needed to *identify the adaptive challenges* as teachers and staff react to greater

specificity and contribute to the process. Alternatively, clarity about the core features and information about *how* the innovation manifests itself in the classroom might (a) increase consensus on the definition of the solution, (b) improve educator confidence and competence in utilizing the practices expected, and (c) provide information (e.g., fidelity) that can be used to improve the supports for teachers and staff (e.g., improved professional development, skill-based training, and coaching) and further *regulate distress*.

Since many innovations lack enough specificity to be usable, a knowledgeable and representative team may need to come together to further operationalize the practices. Collective work by the team to further define the innovation *gives the work back to the people* by supporting meaningful engagement and participation. The work of the team can take the form of creating an innovation configuration (Hall & Hord, 2011) or a practice profile (National Implementation Research Network, 2011). Both specify the essential functions and, in the case of innovation configurations, elaborate by specifying levels of use. For a practice profile, the descriptions of activities and behaviors are classified as expected, developmental, or not appropriate. Of course, these seemingly technical activities of specifying the work of the teacher or staff person generate additional adaptive challenges to pedagogy, philosophy, beliefs, and values that must be sorted out. Hopefully, the sorting process is based on the theory of change and the literature related to effectiveness of the essential functions and the associated activities and behaviors to meet the identified student needs. Alternatively, but still usefully, the process allows teachers and staff to sort themselves—by either continuing to work in that setting or finding a new work setting more aligned with their values, beliefs, and pedagogy. The importance of *protecting all voices* during the process allows concerns to surface and be addressed. Simultaneously, *maintaining disciplined attention* redirects the work back to

the process of creating a usable intervention, increasing ownership of the innovation, and reducing feelings of incompetence, loss, and disloyalty.

#### IMPLEMENTATION STAGES AND ADAPTIVE CHALLENGES

As noted, implementation takes time and occurs in stages: exploration, installation, initial implementation, and full implementation. When the key activities necessary to implement an evidence-based innovation are stage appropriate, the mission-driven process is more likely to be successful. The overall journey from exploration to full implementation can take from 2 to 4 years (Chamberlain, Brown, & Saldana, 2011; Fixsen et al., 2001; Panzano & Roth, 2006). And as Gill et al. (2005, p. xxxiv) observed, “In today’s high-stakes accountability environment, district and school staff typically face pressure to demonstrate immediate gains in student achievement. But reforming schools takes time. It is important that everyone involved...understand that the desired results might not materialize for a few years.”

Although the stages of implementation are sequential, they are not “one and done” sequences nor are they mutually exclusive (Fixsen et al., 2013; Horner et al., 2014). That is, some stages will need to be revisited as the participants change (e.g., teacher selection processes need to *explore* whether or not applicants understand and buy into the instructional practices and philosophy of the school). In addition, the end of one stage is expected to overlap with the beginning of another stage. For example, even as some teachers are still participating in a training sequence (installation), other teachers are beginning to try out the new practices in their classrooms (initial implementation). A truism is that you don’t get to skip any of the stages, and challenges will emerge that require backtracking if the right work is not done at the right time.

What adaptive challenges are likely to be encountered in each stage? How might careful attention to stage-based work incorporate adaptive strategies to address adaptive challenges? Such challenges are sure to emerge during the 2- to 4-year process required to arrive at full implementation, when the student outcomes more fully materialize. Briefly examining the work to be done in the exploration and installation stages illustrates the connection of stage-based work to adaptive challenges and strategies to address them.

#### *EXPLORATION STAGE*

Hallmarks of the exploration stage include forming an implementation team, using data to examine the needs of students, and exploring the root causes prior to looking for possible solutions (Fixsen et al., 2005). The exploration of need is followed by the exploration of possible practices, programs, and frameworks to address the need. This involves engaging teachers, staff, content experts, community, and technical assistance providers in examining the fit, feasibility, evidence, resources required, readiness for use in classrooms, and capacity to implement the

innovation as intended and to sustain it over time. Accompanying all of these exploration activities are opportunities to discover, name, and address adaptive challenges.

Rather than engage a diverse implementation team in the exploration stage, leadership at the school, school district, or state level may yield to pressure to move quickly and give short shrift to this stage, thus inadvertently exacerbating adaptive challenges. Leadership at any level may decide to meet behind closed doors to carefully plan or select innovations or new instructional approaches. Announcing the kick-off of the next new thing and calling people to action with little opportunity for discussion, debate, understanding, and buy-in predictably lead to resistance to change.

Organizational change studies indicate that only about 20% of staff members are ready to embrace a new initiative (Laforge, Velicer, Richmond, & Owen, 1999; Velicer et al., 1995), so “it should come as no surprise that a majority of action initiatives fail” (Prochaska, Prochaska, & Levesque, 2001, p. 249). While concerns can and will arise during any stage of implementation, it is logical that the first two introductory stages are especially likely to generate *adaptive challenges*. However, when examination and dissemination of data about student needs and provision of information about potential programs under consideration (e.g., elements, goals, and philosophy) are core features of exploration, then non-coercive buy-in, acceptance, and commitment are facilitated. Activities related to reviewing data and programs create the opportunity to *get on the balcony* and survey both strengths and emerging adaptive challenges—and select a solution that takes advantage of current strengths and resources. Engaging a team *gives the work back to the people* supporting the development of greater consensus in defining the problem at hand and possible solutions. Well-defined exploration activities serve to *maintain disciplined attention* and *regulate distress* by keeping the work moving at a manageable pace.

A thoughtful exploration stage does not eliminate adaptive challenges or prevent them from arising in later stages; nor should it. However, attention to exploration activities does seem to impact the success and sustainability of programs and practices in education and human services (Fagan & Mihalic, 2003; Fashola & Slavin, 1997; Han & Weiss, 2005; Horner et al., 2014; Horner & Sugai, 2005; Romney, Israel, & Zlatevski, 2014; Slavin & Madden, 1999).

#### *INSTALLATION STAGE*

Before students can actually experience an educational innovation, preparatory activities are essential so that the organization as a whole supports the new ways of work, and teachers and staff feel competent and confident in using the innovation in their classrooms and schools (Wallace et al., 2008). Resources must be allocated, guidance documents created, communication protocols developed, and data routines articulated for monitoring student outcomes and tracking teacher fidelity assessments. Instrumental changes may be needed to

secure space and to purchase equipment (e.g., software, computers) and curriculum materials for classrooms. Professional development, training, and coaching routines must be put in place for the first cohort of teachers and staff and made sustainable to support subsequent cohorts.

Adaptive challenges may emerge during installation. They could cause proponents to become impatient and lose interest, or they could fuel the reluctance of those who remain skeptical about the feasibility and benefits of implementing the innovation. Resources are being expended, time is passing, and students are not improving. The real challenge is to maintain a sense of urgency and avoid letting the innovation fall by the wayside as the next legitimate but competing issue surfaces. Leaders and members of the implementation team must maintain disciplined attention to the activities needed to set the stage for successful initial implementation. And they must communicate the activities that are creating readiness and progress, to build supportive structures and processes at multiple levels.

#### *INITIAL AND FULL IMPLEMENTATION STAGES*

*Adaptive challenges* are never fully put to rest. New adaptive challenges can emerge or previously resolved challenges can re-emerge during initial implementation if the launch is awkward. During initial implementation, often a feeling of incompetence and a desire to return to familiar routines can derail the initiative. Not only are classroom instructional practices and routines new, but often those providing training, coaching, and monitoring fidelity are new to their roles and feeling equally awkward and less than competent. This means that positive responses from students, parents and professional colleagues may not be occurring and that new and fragile behaviors will likely fall away unless there is an opportunity to work through the awkward stage (Bierman et al., 2002; Joyce & Showers, 2002). *Regulating the distress* that comes with uncertain and wobbly implementation and *maintaining disciplined attention* by providing additional support, coaching, and troubleshooting are required as the classroom, training, coaching, and data routines are put in place for the first time.

Full implementation marks the point when the innovation is now “our way of work.” However, there are always new teachers, new staff, new school board members, and new families and students entering the scene. Exploration, installation, and initial implementation along with their attendant adaptive challenges are always in play. This means that leadership and the implementation team must continue to scan for patterns, strengths, and challenges; be willing and able to name adaptive challenges; actively regulate distress while maintaining disciplined attention to the work at hand and preparing for the work to come; and be willing to listen to and discuss concerns as they are raised.

#### IMPLEMENTATION DRIVERS AND ADAPTIVE CHALLENGES

As noted earlier, implementation drivers are the processes required to improve staff competence and confidence, create organizations and systems that enable the innovation to be

used with fidelity and sustained over time, and orient leaders to the right strategies for the types of challenges they are encountering (Blase et al, 2012; Fixsen, et al., 2005). There are three types of implementation drivers: competency drivers, organization drivers, and leadership drivers (Figure 1).

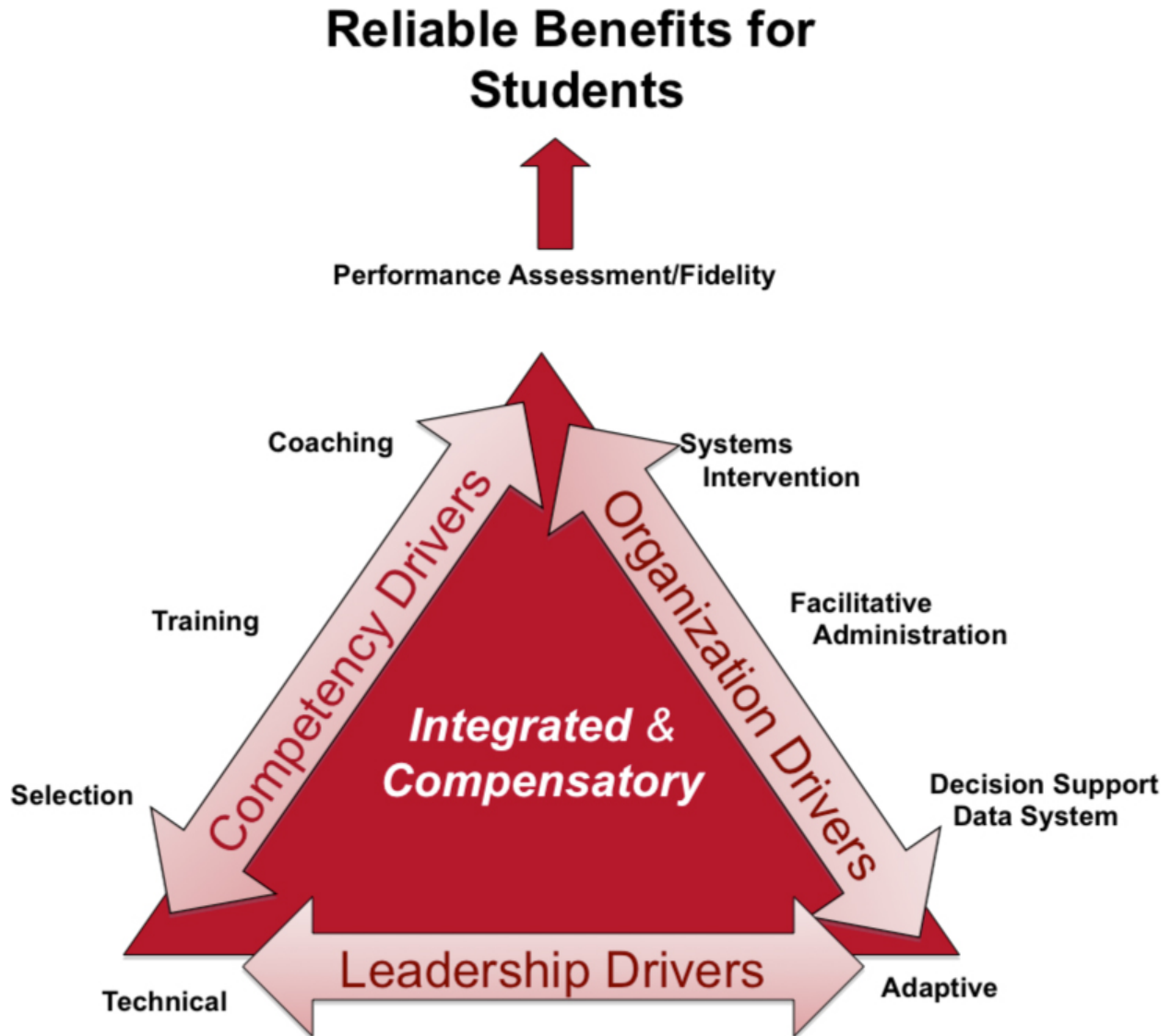


Figure 1. Implementation Drivers

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Source: Reprinted with permission. Fixsen, D. L., & Blase, K. A. (2008). *Drivers framework*. Chapel Hill, NC: The National Implementation Research Network, Frank Porter Graham Child Development Institute, University of North Carolina at Chapel Hill.

The specific implementation drivers within each of the three domains are operationalized and based on best evidence related to each driver (Fixsen et al., 2005). That is, each driver is viewed through an implementation lens, and best practices are operationalized to increase the likelihood of creating necessary changes at the practice, organization, and system levels.

Organizations sometimes indicate that they already use many of the implementation drivers to create change: They select staff, provide professional development opportunities, and engage in activities labeled as coaching. Increasingly, they have outcome data available. However, they may or may not use these levers for change in an implementation-informed way that is likely to result in improved fidelity, sustainability, and functional improvement processes. An examination of three competency drivers—staff selection, coaching, and fidelity assessment—reveals the importance and value of an implementation-informed approach to drivers as well as revealing the interplay with adaptive challenges and the strategies to address those challenges.

#### *STAFF SELECTION*

Implementation-informed staff selection means being clear about the required knowledge, skills, and values, including those needed to implement an evidence-based or evidence-informed innovation (Blase, Fixsen, & Phillips, 1984; Reiter-Lavery, 2004).

What are the unteachables in terms of educators' values and attitudes? What knowledge and skills are required at entry because they will not be highly supported through additional training and coaching? What knowledge and skills are required because deficiencies will make it difficult for the applicant to be successful in implementing the innovation in the educational setting?

For example, most applicants arrive with a viewpoint and experiences formed by interacting with family members. If meaningful family engagement is a core feature of the school district's or school's culture and of the innovation, then the interview process for all staff should include vignettes, scenarios, or behavior rehearsals that tap this set of values and skills. In particular, behavior rehearsals are used to allow applicants to move beyond describing their skills and attitudes to demonstrating them. When a trained interviewer follows a purposefully scripted scene and takes on the role of a family member, then the interviewers can assess the following:

- How the applicant responds to a challenging interaction with the “family member.”
- Whether the applicant is willing to discuss his or her own behavior.
- Whether the applicant asks the “family member” questions in order to understand his or her concerns.
- And most important, the degree to which the applicant is able to accept and use feedback from the “family member” and subsequently from the interviewer after the behavior rehearsal.

This last item, the ability and willingness to accept feedback professionally and use it for self-improvement, is key to implementing any innovation well. Most new routines are not mastered instantly, classroom and school environments are complex, and the needs of students vary across students and over time. The judgment and skills required to appropriately and effectively use new instructional or learning support strategies require time, feedback, the use of data, and a commitment to learning and improvement. When feedback transactions are unpleasant or unproductive, people will quit seeking feedback and people will quit giving feedback—to the detriment of educators and students.

An implementation-informed selection process can help *identify adaptive challenges* that are likely to arise by hiring certain applicants. The scenarios, vignettes, and behavior rehearsals serve a dual purpose. They provide the interviewers with information about the degree to which applicants fit the current culture, practices, and expectations as well as provide applicants with the opportunity to assess their own comfort and competencies. This mutual selection process may result in applicants opting out. While no applicant will be a perfect fit, the interview process can feed information about a new employee's strengths and developmental needs to administrators, coaches, and trainers. This feed-forward process provides anticipatory guidance that will get new staff off to a better start.

Having a knowledgeable person present at and participating in all interviews creates the opportunity for that individual to *get on the balcony*. He or she can more broadly assess the available workforce and consider implications for recruitment practices, hiring timelines, overall suitability of candidates, and implications of training and coaching intensity for new teachers and staff.

In summary, an implementation-informed selection process (selection driver) uses carefully designed scenarios, vignettes, and behavior rehearsals to assess prerequisite values, attitudes, and skills. Behavior rehearsals are structured to assess applicants' willingness and ability to listen to and incorporate feedback. This implementation-informed selection procedure increases the likelihood of applicants more fully understanding expectations. In addition, administrators and others gain relevant information for selecting applicants who are more aligned with the expectations of the educational setting and are receptive to training and coaching.

### *COACHING*

Focusing on knowledge acquisition, primarily through institutes and training days, is not as effective as combining training with implementation-informed coaching in increasing teacher knowledge and improving student outcomes (Garet et al., 2011). Coaching that is implementation informed is an important implementation driver to improve staff competence and confidence in using new instructional practices, assessments, and data (Denton, Vaughn, &

Fletcher, 2003; Joyce & Showers, 2002; Schoenwald, Sheidow, & Letourneau, 2004). Some of the core features of implementation-informed coaching include regular observation of the teacher or staff member (e.g., direct, video, audio) by a knowledgeable person who provides prompt, helpful, and descriptive feedback of strengths, and works with the educator to identify areas and strategies for improvement. It also includes goal-setting conversations between the teacher and coach as the basis for future iterative cycles of observation and feedback to support the teacher's continued development. Asking teachers to reflect on their own skill development early in their acquisition of new skills *without* observational or student data and/or without a knowledgeable coach may result in teachers feeling supported in the short term. However, the process is unlikely to promote increased competence and ultimately confidence—the by-product of improved competency (Harchik, Sherman, Sheldon, & Strouse, 1992).

Implementation-informed coaching also requires support, data, and feedback for the people who do the coaching. A coaching service delivery plan details the type, frequency, and products (e.g., written feedback) for which the coach is accountable. This allows for an informed assessment of fidelity to the coaching routines in terms of “dosage” (e.g., Are we coaching as often as intended?) and targeted supports for coaches (e.g., examining the barriers to coaching as intended; ensuring coaches have resources and get feedback). Regular, formal, anonymous feedback from those being coached combined with educator fidelity data provides fodder for developing targeted supports for coaches (e.g., What should we do to improve support, training, and coaching for our coaches so that they are viewed as helpful? How can our coaches more routinely help educators achieve better fidelity?).

#### *FIDELITY ASSESSMENTS*

This paper employs the term “fidelity assessments” for assessments that measure the degree to which educators used the intervention as intended. The term is synonymous with treatment integrity, program adherence, intervention integrity, and fidelity to the practice. It is no accident that the fidelity assessment driver is at the apex of the implementation drivers graphic (see Figure 1), in terms of both focus and importance. Durlak and DuPre (2008) estimated that evidence-based programs used with acceptable fidelity have effect sizes 3 to 12 times greater than those used with low fidelity. Therefore, focusing the competency, organization, and leadership drivers on producing high-fidelity use of the innovation (e.g., evidence-based instructional practices, assessments, behavioral interventions) is useful.

The ability to answer the question “Did educators do what was required to use the innovation in the classroom?” is critical to improving education. Only when an organization has information about fidelity can it engage in efficient and effective improvement processes. Fidelity assessment data serve as a system improvement diagnostic. This requires asking about



the quality of the supports provided by the organization,, “Did the organization and leadership do what was necessary to support educators in the use of the innovation?”. Fidelity data can help discriminate problems that are due to poor or non-existent use of the intervention as intended from poor choices in selecting the intervention or the need to further develop the intervention to meet student needs (Detrich, 2014). Without fidelity assessments, quality improvement strategies are like random acts of tinkering. It is important to ask questions such as “Do we need to improve the integrity with which the intervention is being implemented? Did we select the wrong thing to do or need to revise the intervention itself?” Without fidelity assessment data, the organization won’t know.

According to NCES, approximately 50 million students are taught by some 3.1 million teachers in about 98,000 schools in roughly 13,600 school districts. Given the scale of the “educational laboratory” available for research and program development, the development and use of valid fidelity assessments in educational research are still relatively scarce (Goncy, Sutherland, Farrell, Sullivan, & Doyle, 2014; Hagermoser Sanetti, & Kratochwill, 2009). And the development of practical, valid fidelity assessments that can be used routinely in educational settings is equally scarce, with some notable exceptions related to social-emotional interventions (Bradshaw, Reinke, Brown, Bevans, & Leaf, 2008; Snyder, Hemmeter, Fox, Bishop, & Miller, 2013) or included in some commercially available curricula and programs (e.g., Archer & Hughes, 2011).

Inclusion of the fidelity assessment driver as a core feature of effective implementation is a lightning rod for *adaptive challenges*. Perhaps adaptive challenges arise because of the history of teacher evaluations being used—or perceived as being used—punitively. This is in sharp contrast to an implementation-informed use of fidelity data as a system diagnostic for critically analyzing ways to improve the implementation drivers, thus supporting teachers in achieving higher fidelity and improving student outcomes. Fidelity assessments also may cut to the heart of differing philosophies and pedagogies in education (i.e., constructivist versus explicit instruction).

Use of fidelity data helps to *maintain disciplined attention* by redirecting supports for educators back to accomplishing the hard work at hand. Reviewing fidelity data over time and across educators also helps facilitate *getting on the balcony* work. This balcony view and discussion of fidelity data not only highlight patterns and systemic issues but also can *regulate distress* if the data reviews are implementation informed. This means that the reviews from the balcony are not related to shaming and blaming teachers but are directed at critically analyzing the implementation drivers and determining how to improve their effectiveness to better support teachers. And while bringing the fidelity data to those who generated it and asking for their input and perspectives might be uncomfortable, there are benefits to *giving the work back to*

*the people*; soliciting their advice about what's working to support them and what else may be needed is enlightening and functional. .

#### SUMMARY: COMPETENCY DRIVERS AND ADAPTIVE CHALLENGES

The very act of ensuring that competency drivers (e.g., selection, training, coaching, fidelity) are in place, implementation informed, and integrated can create *adaptive challenges*. Fortunately, the recommended approaches for addressing such challenges can be facilitated by and incorporated into the use of the implementation drivers.

A common implementation-informed core feature for all the competency drivers is the collection and use of data to shine a light on successes and challenges, including adaptive challenges. But it is not the stand-alone availability of data that generates change in behavior and addresses adaptive challenges. Rather, it is the integrated use of data for improvement with collective accountability for the proximal outcome of good fidelity and more distal results of improved student outcomes.

#### IMPROVEMENT CYCLES AND ADAPTIVE CHALLENGES

Implementation teams use improvement cycles to improve the likelihood that new innovations are launched, implemented well, and sustained over time, and that they achieve hoped-for outcomes. Embedded in each implementation stage, improvement cycles are useful in developing a more usable intervention and in assessing and improving the effectiveness of the implementation drivers. In short, improvement cycles are purposeful processes that can be used to do the following:

- Rapidly assess and solve problems.
- Test the impact of small changes.
- Improve proximal outcomes (e.g., fidelity, quality of implementation drivers).
- Conduct early tests of new practices.
- Focus efforts on an initial cohort to identify and make needed changes in subsequent scale-up efforts.
- Create more hospitable organization and system environments (e.g., aligned policies, guidelines, resources) to better support and sustain new practices and programs.

At the core of each variation on the improvement process is the plan-do-study-act (PDSA) cycle. This improvement process was initially developed by Bell Laboratories in the 1920s (Deming, 1986; Shewhart, 1931). The process was widely adopted in post-World War II Japan to rapidly reconstruct and revitalize the manufacturing sector (DeFeo & Barnard, 2005). The process is now more widely used in health and human service sectors (Akin et al., 2013; Daniels & Sandler, 2008; Varkey, Reller, & Resar, 2007).

PDSA cycles are used productively during each implementation stage, in installing and improving each implementation driver. Implementation teams apply them to increase the likelihood of effective use and beneficial outcomes related to the innovation. The core elements of the PDSA cycle include:

- PLAN – This phase involves identifying current or anticipated challenges, gathering data and information to understand the dimension of the problem, and developing hypotheses about why barriers exist or might exist in the future (e.g., root cause analyses). The next step is to detail action plans that are aligned with the hypotheses, informed by data and that address the challenges, and then to specify measures and data collection protocols.
- DO – This next phase involves conducting the processes as intended. Attempts to follow the PLAN are documented for discussion in the STUDY section.
- STUDY – Monitoring the process comes next (i.e., Did we DO the processes that were specified in the PLAN? Did we collect the data we intended to collect?). The STUDY phase also includes analyzing the data related to the outcomes and determining whether the PLAN made a difference.
- ACT – If the results were adequate, this phase involves embedding the solution into the setting and processes so that improvements are reliably replicated over time and across staff. But if the results were insufficient, then the purpose of this phase is to apply what was learned to develop an improved PLAN for the next cycle.
- CYCLE – Solutions to important problems rarely appear after one attempt. Data from other fields indicate that three to five cycles may be required to find an acceptable and effective solution. Be prepared to repeat the PDSA cycle a few times (Nielsen, 2000).

### *THREE TYPES OF PDSA IMPROVEMENT CYCLES AND ADAPTIVE CHALLENGES AND STRATEGIES*

Reviewing the three types of PDSA improvement cycles provides the opportunity to examine how they support improved implementation. It also sets the stage for understanding the adaptive challenges that may arise and the adaptive strategies that can be employed while engaging in the PDSA process. The three types of PDSA improvement cycles are (a) rapid-cycle problem solving, (b) usability testing, and (c) practice–policy communication cycle.

*Rapid-cycle problem solving.* Not all difficulties can be anticipated when launching a new innovation, no matter how much time is spent in the exploration and installation stages. Therefore, rapid-cycle problem solving is useful when any new practice or routine is first implemented (e.g., new instructional practice, new coaching routines, new data collection processes). This PDSA process is characterized by prompt problem detection and reporting, pulling together of the right team, and use of the process as intended. There are challenges to using the PDSA process as intended including failing to adhere to the process itself (Taylor et al.,

2014). When anticipatory guidance is provided about the upcoming use of rapid-cycle problem solving, the awkwardness of engaging in new practices during initial implementation is normalized.

Adaptive challenges are likely to emerge during initial implementation as teachers and staff experience the reality of putting a new innovation into practice and are likely to feel awkward and less competent. A normal response is to avoid such discomfort by retreating to previous, more comfortable ways of work (Hinds et al., 2015). Using a rapid-cycle PDSA process to address pressing and often unanticipated issues helps improve implementation as well as maintain *disciplined attention* and *regulate the distress* that accompanies new approaches. Providing guidance about rapid-cycle problem solving and engaging teachers and staff in problem solving also serves to *give the work back to the people*.

*Usability testing.* This process is helpful when an innovation is multifaceted or complex (e.g., differentiated instruction routines, first steps in a multipronged approach to reducing disparities in disciplinary practices, launching professional learning communities). Usability testing can be planned by proactively identifying processes likely to be challenging and setting desired benchmarks for success. This proactive approach helps *maintain disciplined attention*, and it is particularly beneficial if the first steps in an intervention must meet a certain criterion for the intervention to continue rolling out successfully and ultimately producing results (Akin et al., 2013). If the early work with students, teachers, or staff is unsuccessful, then there is little chance of achieving fidelity and producing a desirable outcome. Data from other fields indicate that three to five rounds of improvement (e.g., with limited numbers in each cohort) will detect and correct most critical problems (Lewis, 1994). This avoids the scenario of large-scale rollouts that are unsuccessful and burdensome, and therefore often are abandoned. Instead, usability testing quickly detects challenges that can be addressed early on.

The adaptive challenges that emerge during usability testing are similar to those reviewed in the section on rapid-cycle problem solving. However, because the complexity of the intervention is different and the process less discrete, accurately *identifying adaptive challenges and discriminating them from technical challenges* may be more difficult. The *balcony work of the leader* can be facilitated by relying on both quantitative and qualitative data. Interviews and/or focus groups with teachers, staff, and administrators who are expected to use the innovation can help tease out what is working well and what is not, and detect points of conflict. Engaging teachers, staff, and administrators in this way serves to *protect all voices and gives the work back to the people*. Engaging in successive rounds of PDSA sends the message that the innovation is a priority and here to stay; *disciplined attention is maintained*.

*Practice–policy communication cycle.* This process (Figure 2) is useful and necessary when organizations and systems are the targets of the change process or are likely to heavily

influence the success and sustainability of the innovation. The goal of the practice–policy communication cycle is to create transparent and reliable communication processes for relaying policy to the practice level and for the practice level to inform the policy level about actual impact in the educational setting (Fixsen et al., 2013).

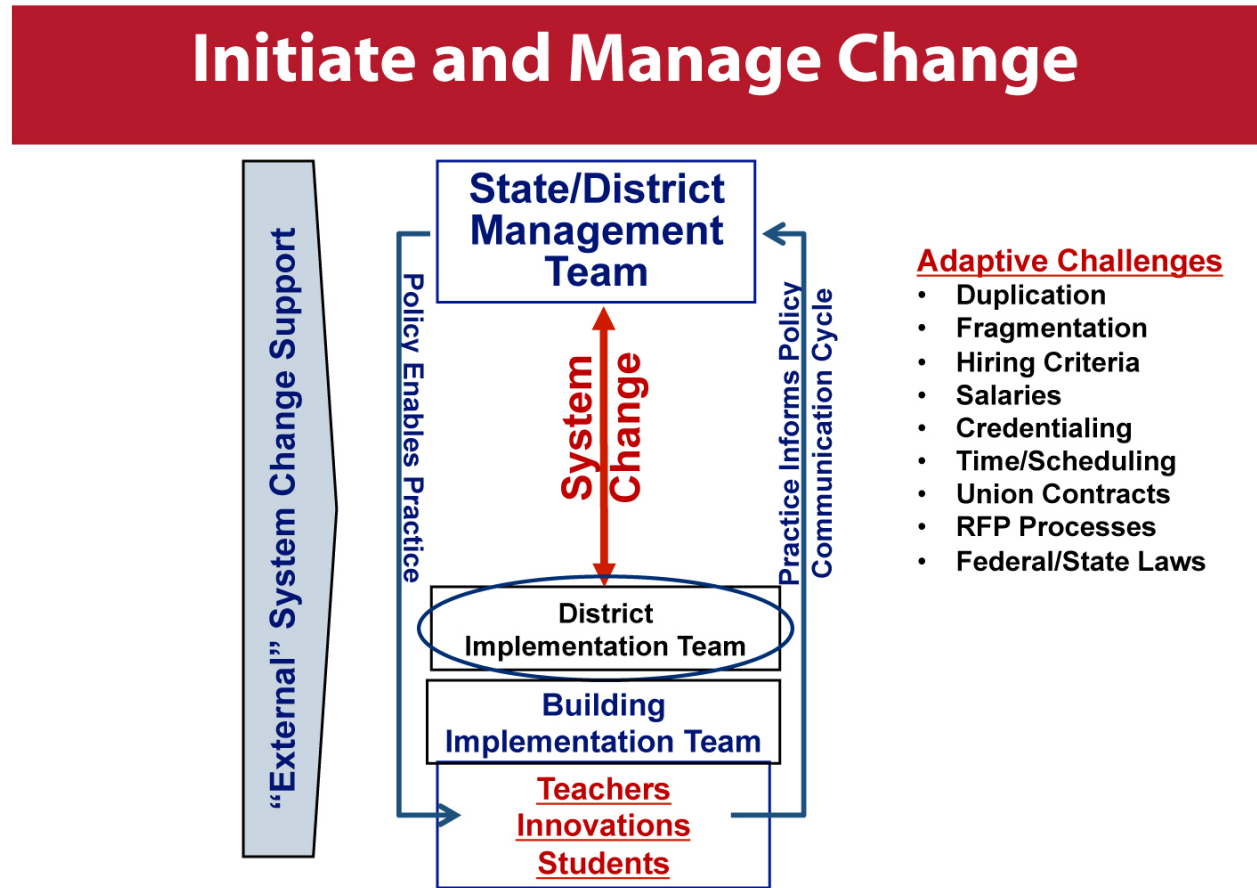


Figure 2. Practice–Policy Communication Cycle

Source: Adapted from: Fixsen, D., Blase, K., Metz, A., & Van Dyke, M. (2013). Statewide implementation of evidence-based programs. *Exceptional Children (Special Issue)*, 79(2), 213-230.

The core features of this cycle include the following:

- Clarity about the functions of each team.
- Agreements among teams or entities to receive and welcome information, communicate successes, and engage in timely problem solving. The information may consist of descriptions of experiences and/or data collected.
- The development and use of linking communication protocols to specify in writing the means, frequency, and types of issues that are best attended to by each level.

- In some cases, linked teams are structured so that key people on a team also sit on another team at another level and are charged with facilitating the communication cycle.

Communicating policy directives or new guidelines has its own challenges in terms of clarity and timeliness of communication. Policy to practice communication occurs through multiple channels (e.g., website, email, documents, meetings) is common. However, functional and transparent mechanisms for the practice level to inform the policy level are not typical. Having administrative layers between those implementing the innovation and policy makers help to ensure that the right problems get resolved at the right level. Still, a process and a culture that allow challenges to be raised to the next level for resolution are required. Without a known and transparent process for communicating challenges to the right level, the layers serve to buffer the organization's leaders and policy makers from hearing about the successes, challenges, and unintended consequences of the new policy, guidelines, incentives, or reporting requirements (Barber & Fullan, 2005; Blase, et al. 2012). One-way communication (i.e. solely top down) prevents understanding the variables that may be preventing implementation from occurring as intended.

The practice–policy communication cycle can bring to the surface and resolve the *technical challenges* that accompany the use of an innovation. Issue can be lifted up to a level (e.g., from single grade to whole school, from individual school to school district) that can address the technical challenges (e.g., funding, improved access to training, use of professional development days, coaching, new data systems). The practice–policy communication cycle also has the potential to identify and address *adaptive challenges* inherent in using and scaling up innovations (e.g., pace of change, agreement on the definition of the problem, learning by doing, solving new problems created when using an innovation, new roles and responsibilities). The practice–policy communication cycle facilitates leaders *getting on the balcony* because patterns across a level can be detected and signal issues that need to be lifted up to the next level. This balcony work helps leaders *identify adaptive and technical challenges* that are systemic rather than one-off. The work at each level not only *gives the work back to the people* but it also *gives the work “up” to the people* most able to resolve the issues.

But there are *adaptive challenges* in even attempting to put a practice–policy communication cycle in place. Legislative and political timelines do not nicely match implementation timelines. And the notion that practice-level feedback will find a timely and unfiltered pathway to the policy maker or administrator may challenge the ability to *protect all voices*. Once information starts to flow, there must be supportive action that allows the status quo to be illuminated and challenged. As Onyett et al. (2009, p. 11) noted, “There is need to develop capacity for delivering such whole systems interventions wherein thinking can be challenged, issues about authority and the exercise of power candidly explored and where participants can continue to

learn and adapt to ever-changing circumstances.” This means that policies, guidelines, and resources must be reviewed, challenged, and aligned so that the actual intent of policies and legislation can be realized. Leaders must be ready to *regulate the distress* that this communication process creates by *identifying and naming these adaptive challenges*, and they must *maintain disciplined attention* as the work of system alignment becomes difficult and uncomfortable.

Given the challenges of exploring, installing, and using a functional practice–policy communication cycle, the role of external facilitators or change agents (Figure 2) is critical (Barber & Fullan, 2005; Khatri & Frieden, 2002; Klein, 2004; Waters, Marzano, & McNulty, 2003). In their studies of implementation of complex innovations, Nord and Tucker (1987) noted that external facilitation was able to overcome the inertia and influence of the status quo to prevent the demise of new initiatives. External facilitators can help to initiate and manage change; make good use of the strategies for addressing adaptive challenges; and coach teams and key persons in the use of implementation best practices and adaptive strategies. Also, they may face less risk than employees in identifying adaptive challenges. In education, groups such as the Center on Innovation and Improvement ([www.centerii.org](http://www.centerii.org)), Positive Behavioral Interventions and Supports ([www.pbis.org](http://www.pbis.org)), and the State Implementation and Scaling-up of Evidence-based Practices Center ([www.scalingup.org](http://www.scalingup.org)) are external change agents that help organizations initiate and manage change processes.

In summary, PDSA improvement cycles are useful throughout the implementation process and can rapidly improve practices, implementation processes, and data systems. They are used to test and improve elements of interventions or challenging implementation processes. Over time and across levels of a system, improvement cycles are employed to identify and sustain what’s working, raise challenges and barriers to the level that can resolve the issues, and prevent the institutionalization of barriers. While improvement cycles are productive in identifying and resolving adaptive challenges, they can create their own adaptive challenges simply by being used.

#### IMPLEMENTATION TEAMS AND ADAPTIVE CHALLENGES AND STRATEGIES

Implementation teams are structures accountable for steering the implementation process through to full implementation, as well as for ensuring ongoing improvement and sustainability. An implementation team uses sound implementation practices (e.g., stages, implementation drivers, improvement cycles) as it works toward full and effective operation of usable interventions. It is accountable for selecting, installing, supporting implementation, ensuring high fidelity, and making the necessary organizational changes to improve and sustain the work. The team is responsible for either directly providing these processes or arranging for them (e.g., subgroup work, consultants, technical assistance centers). And because an implementation

team is in the messy business of managing change, it inevitably creates and then must identify and address *adaptive challenges*.

Meaningful and large-scale implementation efforts at the system or practice level are more likely to be successful with the active engagement and accountability of implementation teams (Brown et al., 2014; Fixsen et al., 2010; Higgins, Weiner, & Young, 2012; Saldana & Chamberlain, 2012; Sugai & Horner, 2006). The number and levels of teams (e.g., school, school district, state) depend on the scope of the endeavor and the degree to which system change is needed. Each team represents the system at a particular level. Functional practice and system change are more likely when teams at multiple levels are integrated so that each team’s information, knowledge, successes, and challenges are appropriately shared with other teams at other levels (Figure 3). Each team is charged with developing the overall infrastructure needed for implementation *and* with actively supporting the work of the team or teams below its level. As noted in the section on practice–policy communication cycles, communication pathways must be transparent and focused on solving both technical and adaptive problems, building capacity, ensuring implementation, and aligning policies , procedures, and funding to support new ways of work (Spoth, Greenberg, Bierman, & Redmond, 2004).

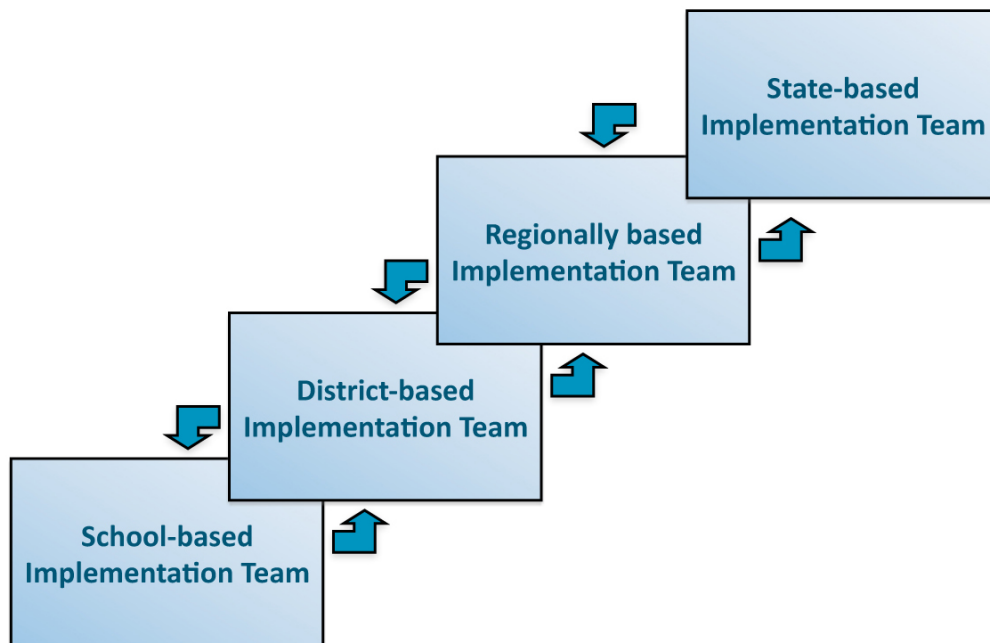


Figure 3. Linked Teaming Structure



*Adaptive challenges* can emerge in creating a functional implementation team since the team's roles and responsibilities require sharing power, along with accountability for achieving agreed-upon outcomes, with leadership. This is a paradigm shift for many. An implementation team is *not* an advisory group or committee that provides input (e.g., periodic meetings for decision making, discussion). The team is actively involved on a daily basis with implementation efforts devoted to ensuring the full use of the innovation. It has work to do between formal meetings, and systemic problem solving is a core feature of its work.

Developing terms of reference (ToR) or a team charter is one way to *address adaptive challenges*. Terms of reference outline the purpose of the implementation team, how the group will be structured, how the work will be done, limits of authority, values, and decision making processes (e.g., majority, unanimity). If the ToR document is productively debated, collaboratively developed, and actively used, it can do the following:

Help *identify adaptive challenges* (e.g., Are we still aligned on values? We seem to have very different ideas about our mission. Do we need to change our terms of reference?).

- Help *maintain disciplined attention* (e.g., That's not in our scope of work according to our terms of reference. Maybe we need to refocus on our mission and goals.). The ToR also can be used in recruiting and orienting new team members. In addition, the document can be used as a touchstone for reviewing the mission, timelines, expected results, and other details.
- Help *regulate distress* and *protect all voices* because the conflict is with the ToR (i.e., the need to adhere to it or change it) rather than with people on the team.
- Help *view the work of the team from the balcony* by having a review of the ToR and updating it. The review allows the team to step back from the day-to-day work to determine if the right work is being done by the right people to achieve agreed-upon goals.
- Consistently *give the work back to the people* as the implementation team engages in new learning, uncovers adaptive challenges, and reassesses the currency of the ToR and the need for revisions.

Of course, implementation team members need the capacity and courage to recognize when *adaptive challenges* are in play. And those challenges will come not only from within the team but also from outside the team along the rocky road to implementation. If the team ignores the adaptive challenges and continues to pursue technical solutions in the face of adaptive issues, it is unlikely to be successful.

In summary, implementation teams are the linked structures accountable for engaging the relevant stakeholders and executing high-quality implementation of evidence-based and

evidence-informed innovations. They are the focal point for identifying and addressing adaptive challenges, all the while creating readiness, making sure that implementation occurs as intended, monitoring outcomes, communicating successes and challenges, and engaging in system alignment.

## CONCLUSION

Introducing and effectively supporting evidence-based instructional and behavioral practices in education are simultaneously promising and problematic. While knowledge about the effectiveness of an innovation is important in choosing a pathway to improvement, such knowledge is not sufficient to change practice in the classroom and school. Nor does evidence about innovation effectiveness shed light on the organization and system changes needed to create a hospitable environment for the new ways of work. In a briefing report on school improvement, Jerald (2005, p. 2) noted, “As thousands of administrators and teachers have discovered too late, implementing an improvement plan—at least any plan worth its salt—really comes down to changing complex organizations in fundamental ways....”

This paper makes the case for attending to the “how” of implementation to ensure that the “what” of evidence-based innovations is available, effective, and sustainable in typical classroom settings (Metz & Bartley, 2012). It also proposes integrated attention to adaptive challenges accompanying systemic change as deeply held beliefs and practices are challenged (Heifetz et al., 2009). Conceptualizing a multilevel change process that relies on implementation science and best practices as well as attention to adaptive challenges provides an opportunity to successfully navigate the complex and lengthy education improvement journey.

The five active implementation frameworks require multilevel consideration and application when engaging in school improvement through the use of evidence-based and evidence-informed innovations. As discussed, each of the five frameworks has the potential to generate and identify adaptive challenges and can serve as the means to address them with adaptive strategies. While addressing adaptive challenges can be challenging, making progress in addressing the technical challenges is just as important. The implementation journey requires balanced leadership and strategies that can flow from adaptive to technical and back again (Daly & Chrispeels, 2008; Waters et al., 2003). And it requires managing this flow in conjunction with attention to usable interventions, stages of implementation, implementation drivers, and improvement cycles, and with the focus and expertise of implementation teams.

Considering that this paper began with a quote from Seymour Sarason, it seems fitting to close with another of Sarason’s astute observations. He observed, “The way in which a change process is conceptualized is far more fateful for success or failure than the content one seeks to

implement. You can have the most creative, compellingly valid, productive idea in the world, but whether it can become embedded and sustained in a socially complex setting will be primarily a function of how you conceptualize the implementation change process” (Sarason, 1996, p. 78). Implementation science and best practices with integrated attention to adaptive challenges provide a promising conceptualization.

### References

- Adelman, H.T. & Taylor, L. (2003). On sustainability of project innovations as systemic change. *Journal of Educational and Psychological Consultation, (14)1*, 1 – 25.
- Akin, B. A., Bryson, S. A., Testa, M. F., Blase, K. A., McDonald, T., & Melz, H. (2013). Usability testing, initial implementation and formative evaluation of an evidence-based intervention: Lessons from a demonstration project to reduce long-term foster care. *Evaluation and Program Planning 41*, 19–30.
- Archer, A., & Hughes, C. (2011). *Explicit instruction: Effective and efficient teaching*. New York, NY: Guilford Press.
- Ball, S. J. (1987), *The micro-politics of the school: Towards a theory of school organization*. London, England: Methuen.
- Barber, M., & Fullan, M. (2005). Tri-level development: Putting systems thinking into action. *Education Weekly, 24(25)*, 34–35.
- Best, M., & Neuhauser, D. (2004). Ignaz Semmelweis and the birth of infection control. *BMJ Quality Safety Health Care, 13*, 233–234.
- Bierman, K. L., Coie, J. D., Dodge, K. A., Greenberg, M. T., Lochman, J. E., McMahon, R. J., & Pinderhughes, E. (2002). The implementation of the Fast Track Program: An example of a large-scale prevention science efficacy trial. *Journal of Abnormal Child Psychology, 30(1)*, 1–17.
- Blase, K. A., Fixsen, D. L., & Phillips, E. L. (1984). Residential treatment for troubled children: Developing service delivery systems. In S. C. Paine, G. T. Bellamy, & B. Wilcox (Eds.), *Human services that work: From innovation to standard practice* (pp. 149-165). Baltimore: Paul H. Brookes Publishing.
- Blase, K. A., & Fixsen, D. L. (2013). *Core intervention components: Identifying and operationalizing what makes programs work*. ASPE Research Brief, Office of the Assistant Secretary for Planning and Evaluation, Office of Human Services Policy, U.S.

Department of Health and Human Services.

<http://supportiveschooldiscipline.org/sites/ncssd/files/ASPEimplementation.pdf>

- Blase, K., Van Dyke, M., Fixsen, D., & Bailey, F. W. (2012). Implementation science: Key concepts, themes and evidence for practitioners in educational psychology. In B. Kelly & D. Perkins (Eds.), *Handbook of implementation science for psychology in education: How to promote evidence based practice* (pp. 13–34). London, England: Cambridge University Press.
- Bradshaw, C. P., Reinke, W. M., Brown, L. D., Bevans, K. B., & Leaf, P. J. (2008). Implementation of school-wide positive behavioral interventions and supports (PBIS) in elementary schools: Observations from a randomized trial. *Education and Treatment of Children, 31*(1), 1–26.
- Brown, C. H., Chamberlain, P., Saldana, L., Padgett, C., Wang, W., & Cruden, G. (2014). Evaluation of two implementation strategies in 51 child county public service systems in two states: Results of a cluster randomized head-to-head implementation trial. *Implementation Science, 9*, 134.
- Bryce, J., Gilroy, K., Jones, G., Hazel, E., Black, R. E., & Victora, C. G. (2010). The accelerated child survival and development programme in West Africa: A retrospective evaluation. *The Lancet, 375*(9714), 572–582.
- Carnine, D. (2000). *Why education experts resist effective practice (and what it would take to make education more like medicine)*. Washington, DC: Thomas B. Fordham Foundation.
- Chamberlain, P., Brown, C. H., & Saldana, L. (2011). Observational measure of implementation progress in community based settings: The stages of implementation completion (SIC). *Implementation Science, 6*, 116. doi:10.1186/1748-5908-6-116
- Daly, A. J., & Chrispeels, J. (2008). A question of trust: Predictive conditions for adaptive and technical leadership in educational contexts. *Leadership and Policy in Schools, 7*, 30–63.
- Daniels, V-S., & Sandler, I. (2008). Use of quality management methods in the transition from efficacious prevention programs to effective prevention services. *American Journal of Community Psychology, 41*, 250–261.
- DeFeo, J. A., & Barnard, W. W. (2005). A roadmap for change. *Quality progress, 38*(1), 24–30.
- Deming, W. E. (1986). *Out of the crisis*. Cambridge, MA: MIT Press.
- Denton, C.A., Vaughn, S., & Fletcher, J.M. (2003). Bringing research-based practice in Reading intervention to scale. *Learning Disabilities Research & Practice, 18*(3), 201- 211.

Detrich, R. (2014). Treatment integrity: Fundamental to education reform. *Journal of Cognitive Education and Psychology, 13*(2), 258–271.

Durlak, J.A. & DuPre, E.P. (2008). Implementation matters: A review of research on the influence of implementation on program outcomes and the factors affecting implementation. *American Journal of Community Psychology, (41)*3 – 4, 327-350.

Fagan, A. A., & Mihalic, S. (2003). Strategies for enhancing the adoption of school-based prevention programs: Lessons learned from the Blueprints for Violence Prevention replications of the Life Skills training program. *Journal of Community Psychology, 31*(3), 235–253.

Fashola, O., & Slavin, R. E. (1997). *Effective and replicable programs for students placed at risk in elementary and middle schools*: Paper written under funding from the Office of Educational Research and Improvement. Baltimore, MD: Johns Hopkins University.

Felner, R. D., Favazza, A., Shim, M., Brand, S., Gu, K., & Noonan, N. (2001). Whole school improvement and restructuring as prevention and promotion—Lessons from STEP and the project on high performance learning communities. *Journal of School Psychology, 39*(2), 177–202.

Fixsen, D. L., Blase, K. A., Duda, M. A., Naoom, S. F., & Van Dyke, M. K. (2010). Implementation of evidence-based treatments for children and adolescents: Research findings and their implications for the future. In J. R. Weisz & A. E. Kazdin (Eds.), *Evidence-based psychotherapies for children and adolescents* (2nd ed.), 435 – 450. New York, NY: Guilford Press.

Fixsen, D., Blase, K., Metz, A., & Van Dyke, M. (2013). Statewide implementation of evidence-based programs. *Exceptional Children, 79*(2), 213–230.

Fixsen, D. L., Blase, K. A., Timbers, G. D., & Wolf, M. M. (2001). In search of program implementation: 792 replications of the Teaching-Family Model. In G. A. Bernfeld, D. P. Farrington & A. W. Leschied (Eds.), ***Offender rehabilitation in practice: Implementing and evaluating effective programs*** (pp. 149–166). London, England: Wiley.

Fixsen, D. L., Naoom, S. F., Blase, K. A., Friedman, R. M., & Wallace, F. (2005). *Implementation research: A synthesis of the literature*. (FMHI Publication No. 231). Tampa, FL: University of South Florida, Louis de la Parte Florida Mental Health Institute, National Implementation Research Network.

- Garet, M., Wayne, A., Stancavage, F., Taylor, J., Eaton, M., Walters, K., ... Doolittle, F. (2011). *Middle school mathematics professional development impact study: Findings after the second year of implementation*. (NCEE 2011-4024). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.
- Gawande A. (2004). Notes of a surgeon: On washing hands. *New England Journal of Medicine*, 350, 1283–1286.
- Gill, B. P, Hamilton, L. S., Lockwood, J. R., Marsh, J. A., Zimmer, R. W., Hill, D., & Prebish, S. (2005) *Inspiration, perspiration, and time: Operations and achievement in Edison schools*. Santa Monica, CA: Rand Corporation.
- Glennan Jr., T. K., Bodilly, S. J., Galegher, J. R., & Kerr, K. A. (2004). *Expanding the reach of education reforms; Perspectives from leaders in the scale-up of educational interventions*. Santa Monica, CA: Rand Corporation.
- Goncy, E. A., Sutherland, K. S., Farrell, A. D., Sullivan, T. N., & Doyle, S. T. (2014). Measuring teacher implementation in delivery of a bullying prevention program: The impact of instructional and procedural adherence and competence on student responsiveness. *Prevention Science*, October 2014, 1–11, doi 10.1007/s11121-014-0508-9.
- Hagermoser Sanetti, L. M., & Kratochwill, T. R. (2009). Toward developing a science of treatment integrity: Introduction to the special series. *School Psychology Review*, 38, 445–459.
- Han, S. S., & Weiss, B. (2005). Sustainability of teacher implementation of school-based mental health programs. *Journal of Abnormal Child Psychology*, 33(6), 665–679. Hall, G. E., & Hord, S. M. (2011). *Implementing change: Patterns, principles, and potholes* (3rd ed.). Upper Saddle River, NJ: Pearson.
- Harchik, A. E., Sherman, J. A., Sheldon, J. B., & Strouse, M. C. (1992). Ongoing consultation as a method of improving performance of staff members in a group home. *Journal of Applied Behavior Analysis*, 25(3), 599–610.
- Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. New York, NY: Routledge.
- Heifetz, R. A. (1994). *Leadership without easy answers*, Cambridge, MA: Harvard University Press.

- Heifetz, R. A., Grashow, A., & Linsky, M. (2009). *The practice of adaptive leadership: Tools and tactics for changing your organization and the world*. Boston, MA: Harvard Business Press.
- Heifetz, R. A., & Laurie, D. L. (1997). The work of leadership. *Harvard Business Review*, 75(1), 124–134.
- Higgins, M. C., Weiner, J., & Young, L. (2012). Implementation teams: A new lever for organizational change. *Journal of Organizational Behavior*, 33(3), 366-388.
- Hinds, E., Jones, L.B., Gau, J.M., Forrester, K.K., & Biglan, A. (2015). Teacher distress and the role of experiential avoidance. *Psychology in the Schools*,(00)00, 1 – 14.
- Horner, R. H., Kincaid, D., Sugai, G., Lewis, T., Eber, L., Barrett, S.,... Johnson, J. (2014). Scaling up school-wide positive behavioral interventions and supports: Experiences of seven states with documented success. *Journal of Positive Behavior Interventions*, 16(4), 197–208.
- Horner, R. H., Sugai, G., Todd, A., & Lewis-Palmer (2005). School-wide positive behavior support: An alternative approach to discipline in schools. In L. Bambara & L. Kern (Eds.) *Individualized support for students with problem behaviors: Designing positive behavior plans* (pp. 359-390). New York, NY: Guilford Press.
- Jerald, C. (2005). *The implementation trap: Helping schools overcome barriers to change*. Policy brief (pp. 1–12). Washington, DC: The Center for Comprehensive School Reform and Improvement.
- Joyce, B., & Showers, B. (2002). *Student achievement through staff development* (3rd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.
- Khatri, G. R., & Frieden, T. R. (2002). Controlling tuberculosis in India. *New England Journal of Medicine*, 347(18), 1420–1425.
- Klein, J. A. (2004). *True change: How outsiders on the inside get things done in organizations*. San Francisco, CA: Jossey-Bass.
- Laforge, R. G., Velicer, W. F., Richmond, R. L., & Owen, N. (1999). Stage distributions for five health behaviors in the United States and Australia. *Preventive Medicine*, 28, 61–74.
- Lewis, J. R. (1994). Sample sizes for usability studies: Additional considerations. *Human Factors*, 36(2), 368–378.

- Metz, A. & Bartley, L. (2012). Active implementation frameworks for program success: How to use implementation science to improve outcomes for children. *Zero to Three*, 11 – 18.
- National Center for Education Statistics. (2011). *The nation's report card: Reading 2011* (NCES 2012-457). Washington, DC: Institute of Education Sciences, U.S. Department of Education. Retrieved February 6, 2015, <http://nces.ed.gov/nationsreportcard/pdf/main2011/2012457.pdf>
- National Implementation Research Network, (2014). Active Implementation Hub: Lesson 3 *Practice profiles*. University of North Carolina at Chapel Hill: Frank Porter Graham Child Development Institute. Retrieved February 3, 2015, [https://unc-fpg-cdi.adobeconnect.com/\\_a992899727/ai-lesson3/](https://unc-fpg-cdi.adobeconnect.com/_a992899727/ai-lesson3/)
- Nielsen, J. (2000). *Why you only need to test with 5 users*. Retrieved August 23, 2014 from <http://www.nngroup.com/articles/why-you-only-need-to-test-with-5-users/>
- Nord, W. R., & Tucker, S. (1987). *Implementing routine and radical innovations*. Lexington, MA: D. C. Heath and Company.
- O'Donoghue, J. (2002). Zimbabwe's AIDS action programme for schools. *Evaluation and Program Planning*, 25(4), 387–396.
- Onyett, S., Rees, A., Borrill, C., Shapiro, D., & Boldison, S. (2009). The evaluation of a local whole systems intervention for improved team working and leadership in mental health services. *The Innovation Journal: The Public Sector Innovation Journal*, 14(1), 1018.
- Panzano, P.C., & Roth, D. (2006). The decision to adopt evidence-based and other innovative mental health practices: Risky business? *Psychiatric Services*, 57(8), 1153–1161.
- Pennucci, A., & Lemon, M. (2014). *Updated inventory of evidence- and research-based practices: Washington's K–12 Learning Assistance Program*. (Doc. No. 14-09-2201). Olympia, WA: Washington State Institute for Public Policy.
- Prochaska, J. M., Prochaska, J. O., & Levesque, D. A. (2001). A transtheoretical approach to changing organizations. *Administration and Policy in Mental Health and Mental Health Services Research*, 28(4), 247–261.
- Reiter-Lavery, L. (2004). *Finding great MST therapists: New and improved hiring guidelines*. Paper presented at the Third International MST Conference, MST Services, Charleston, SC.
- Rittel, H. W. J., & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy Sciences*, 4, 155–169.



- Romney, S., Israel, N., & Zlatevski, D. (2014). Exploration-stage implementation variation: Its effect on the cost-effectiveness of an evidence-based parenting program. *Zeitschrift für Psychologie, Vol 222(1)*, 37-48.
- Saldana, L., & Chamberlain, P. (2012). Supporting implementation: The role of community development teams to build infrastructure, *American Journal of Psychology, 50*, 334–346.
- Sarason, S. B. (1971). *The culture of the school and the problem of change*. Boston, MA: Allyn and Bacon.
- Sarason, S. B. (1996). *Revisiting “The culture of the school and the problem of change.”* New York, NY: Teachers College Press.
- Schoenwald, S.K., Sheidow, A.J., & Letourneau, E.J. (2004). Toward effective quality assurance I evidence-based practice: Links between expert consultation, therapist fidelity, and child outcomes. *Journal of Clinical Child and Adolescent Psychology, 33(1)*, 94-104.
- Shewhart, W. A. (1931). *Economic control of quality of manufactured product*. New York, NY: D. Van Nostrand Company.
- Slavin, R. E., & Madden, N. A. (1999). *Disseminating success for all: Lessons for policy and practice* (Report No. 30). Baltimore, MD: Center for Research on the Education of Students Placed at Risk (CRESPAR), Johns Hopkins University.
- Snyder, P. A., Hemmeter, M. L., Fox, L., Bishop, C. C., & Miller, M. D. (2013). Developing and gathering psychometric evidence for a fidelity instrument, the Teaching Pyramid Observation Tool-Pilot Version. *Journal of Early Intervention, 35*, 150 – 172.
- Spoth, R., Greenberg, M., Bierman, K., & Redmond, C. (2004). PROSPER community-university partnership model for public education systems: Capacity building for evidence-based, competence-building prevention. *Prevention Science, 5(1)*, 31–39.
- Stewart, A. M, Webb, J. W. Giles, B. D., & Hewitt, D. (1956). Preliminary communication: Malignant disease in childhood and diagnostic irradiation in-utero, *The Lancet, 2*, 447.
- Sugai, G., & Horner, R. R. (2006). A promising approach for expanding and sustaining school-wide positive behavior support. *School psychology review, 35(2)*, 245.
- Taylor, M. J., McNicholas, C., Nicolay, C., Darzi, A., Bel, D., & Reed, J. E. (2014). Systematic review of the application of the plan–do–study–act method to improve quality in healthcare. *BMJ Quality and Safety, 23*, 290–298.

- U.S. Department of Education, Office of Special Education Programs, Monitoring and State Improvement Planning Division. (2014). Final Part B SPP/APR Measurement Table Retrieved February 6, 2015  
<http://www2.ed.gov/policy/speced/guid/idea/bapr/2014/2014-part-b-measurement-table.pdf>
- Varkey, P., Reller, M. K., & Resar, R. K. (2007). Basics of quality improvement in health care, *Mayo Clinic Proceedings*, 82(6), 735–739.
- Velicer, W. F., Fava, J. L., Prochaska, J. O., Abrams, D. B., Emmons, K. M., & Pierce, J. P. (1995). Distribution of smokers by stage in three representative samples. *Preventive Medicine*, 24(4), 401–411.
- Vernez, G., Karam, R., Mariano, L. T., & DeMartini, C. (2006). *Evaluating comprehensive school reform models at scale: Focus on implementation*. Santa Monica, CA: Rand Corporation.
- Wallace, F., Blase, K., Fixsen, D., & Naoom, S. (2008). *Implementing the findings of research: Bridging the gap between knowledge and practice*. Alexandria, VA: Educational Research Service.
- Waters, J. T., Marzano, R. J., & McNulty, B. (2003). *Balanced leadership: What 30 years of research tells us about the effect of leadership on student achievement*. Aurora, CO: Mid-continent Research for Education and Learning.
- Watkins, C. L. (1995). Follow through: Why didn't we? *Effective School Practices*, 15(1). Retrieved October 10, 2014, <http://darkwing.uoregon.edu/~adiiep/ft/watkins.htm>
- Westat, Inc., Chapin Hall Center for Children & James Bell Associates. (2002). *Evaluation of family preservation and reunification programs: Final Report*. U.S. Department of Education Office of Educational Research and Improvement (OERI) National Library of Education (NLE) Educational Resources Information Center (ERIC).