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# Becoming a System of Professional Learning: Conceptualizing Improvement As a Throughline of Learning

Michelle L. Forman
*Bank Street College of Education*, mforman2@bankstreet.edu

Tracy Fray-Oliver
*Bank Street College of Education*, tfrayoliver@bankstreet.edu

Doug Knecht
*Bank Street College of Education*, dknecht@bankstreet.edu

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# BECOMING A SYSTEM OF PROFESSIONAL LEARNING: CONCEPTUALIZING IMPROVEMENT AS A THROUGHLINE OF LEARNING

## Abstract

This white paper introduces the "Throughline of Learning" *(Throughline)* model developed by the Bank Street Education Center. The model builds on the concept of the instructional core and demonstrates how focusing on system-wide adult learning needs can help districts successfully reimagine their approach to instructional improvement. Forman, Knecht, and Fray-Oliver share how this emphasis on ongoing, coordinated learning opportunities builds on recent research; they also explore the implications of this theory on cultivating improvement at scale. They highlight the following lessons learned from implementation across a range of district partners:

1. The conceptual shift from "doing" to "learning" implied by the model has been well-received by educators
2. Helping practitioners access and explore research can help them see the adult learning an envisioned end state demands, and
3. Specialized bodies of expertise are necessary if practitioners are to articulate a vision for instruction that is deep and specific enough to drive this process.

They close by discussing how this process can be challenging in practice and share research-based tools that can support districts in engaging in this work.

## From Systems of Doing to Systems of Learning

Happily, the field of school improvement is coalescing around the idea of districts serving as coherent systems of professional learning in which district leaders coordinate supports for    teachers with learning opportunities across contexts and role groups. Scholars argue that if districts approach instructional improvement efforts as the coordination of curriculum, professional development opportunities, standards, and assessment from the outset, initiatives have a much stronger chance of taking root in teacher practice (Cobb, Jackson, Henrick, & Smith, 2018; The Aspen Institute, n.d.). While school systems may embrace this approach in theory, shifting a district's orientation from one of implementation mandates to one of coordinated adult learning is a complex endeavor requiring practitioners to rethink core aspects of their practice. To make matters more difficult, authentic examples of districts organized in this way are not readily available for study (Cobb et al., 2018).

The Bank Street Education Center was designed to support school systems in achieving more positive and equitable student outcomes, and our teams work to support districts to become coherent professional learning systems toward these ends. In this piece, we describe our use of a conceptual model called a learning Throughline, which we designed with the singular goal of helping our partners envision their instructional improvement efforts in terms of ongoing, coordinated learning opportunities. After a few years of using this approach with districts and intermediary organizations across the country, we are able to share several lessons learned:

1. Practitioners are receptive to the conceptual shift from implementation to learning implied by the model

2. Facilitated experiences with research can help practitioners begin to see the adult learning implied by a desired end state

3. Creating a vision for instruction with enough specificity and depth to orient a teacher learning journey requires access to specialized bodies of expertise.

In this article, we provide an overview of our Throughline approach and a sense for the foundational research we use with partners to identify the adult learning required by an improvement strategy for their context. We then turn to lessons learned from a range of participants across our partnerships, including teacher teams, district executive cabinets, and intermediary organizations, and we share experiences that highlight what the Throughline has afforded us with regard to theories of action for improvement at scale. In the final section, we discuss where this approach proves challenging in practice, given the depth and breadth of expertise required to create a vision of classroom instruction able to illuminate a sequence of learning goals for teachers. [1]

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[1]  We would like to acknowledge the authors Paul Cobb, Kara Jackson, Erin Henrick, Thomas Smith and the MIST Team for both confirming and extending the conclusions we have drawn over the course of our work with districts since 2016. We refer particularly to the term "ambitious and equitable" when describing a vision for instruction, and for the framing of a vision as able to represent a sequence of learning goals for teachers.
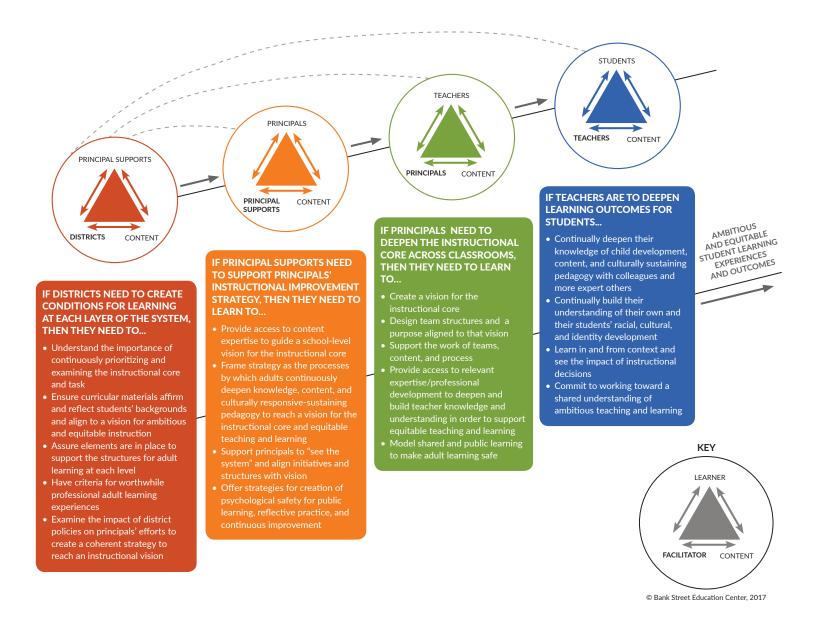
## The Throughline: A Conceptual Model to Surface Required Adult Learning

Calls in scholarship for districts to transform their role from one of regulation and control to one of leading learning acknowledge that developing this capacity places a significant demand on system leaders (Honig, Venkateswaran, & McNeil, 2017; Jaquith, 2017). Indeed, we have found that educators at all levels of the system struggle to articulate an improvement effort in terms of the adult learning opportunities it would imply. Identifying the critical capacities adults would need in order to bring an effort to life in schools is challenging, partly because such efforts are traditionally defined by either the end goals for student outcomes or best practices for teachers (Munter, 2014).

The Throughline visual was designed to guide practitioners' engagement with the idea of improvement as coordinated opportunities for adult learning, and serves as a jumping-off point to determine the purpose, content, and participants of the learning relationships they must create to enact new forms of practice at scale (Grossman, Smagorinsky, & Valencia, 1999; Honig et al., 2017; Jaquith, 2017). As a means to help our partners see their context as a coherent adult learning system in service of improved outcomes for students, we represent their district as a series of linked instructional core triangles (see fig. 1). Originally published in a report on instructional capacity and improvement, the construct of the instructional core treats the interactions among teachers, students, and content as the source of student learning (Cohen & Ball, 1999). While practitioners have developed facility with this frame in the context of discerning the academic task in classrooms (City, Elmore, Fiarman, & Teitel, 2009; Doyle, 1983; Stein, Smith, Schwan, Henningsen, & Silver, 2009), we use it to support our partners' ability to identify the adult learning that underlies a given improvement effort. Specifically, we use the Throughline as a tool to help practitioners use research to determine what knowledge, skills, or understandings a particular improvement effort would require for educators across their system, who is responsible for facilitating this learning, and where in their system these opportunities would occur (Borko, 2004; Jaquith, 2017).[2]

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2  Ann Jaquith at the Stanford Center for Opportunity Policy in Education used a similar series of linked "instructional triangles" with principal supervisors to make visible intersections between levels of a system where acts of instructional leadership could occur.

**IF DISTRICTS NEED TO CREATE CONDITIONS FOR LEARNING AT EACH LAYER OF THE SYSTEM, THEN THEY NEED TO...**

- Understand the importance of continuously prioritizing and examining the instructional core and task
- Ensure curricular materials affirm and reflect students' backgrounds and align to a vision for ambitious and equitable instruction
- Assure elements are in place to support the structures for adult learning at each level
- Have criteria for worthwhile professional adult learning experiences
- Examine the impact of district policies on principals' efforts to create a coherent strategy to reach an instructional vision

**IF PRINCIPAL SUPPORTS NEED TO SUPPORT PRINCIPALS' INSTRUCTIONAL IMPROVEMENT STRATEGY, THEN THEY NEED TO LEARN TO...**

- Provide access to content expertise to guide a school-level vision for the instructional core
- Frame strategy as the processes by which adults continuously deepen knowledge, content, and culturally responsive-sustaining pedagogy to reach a vision for the instructional core and equitable teaching and learning
- Support principals to "see the system" and align initiatives and structures with vision
- Offer strategies for creation of psychological safety for public learning, reflective practice, and continuous improvement

**IF PRINCIPALS NEED TO DEEPEN THE INSTRUCTIONAL CORE ACROSS CLASSROOMS, THEN THEY NEED TO LEARN TO...**

- Create a vision for the instructional core
- Design team structures and a purpose aligned to that vision
- Support the work of teams, content, and process
- Provide access to relevant expertise/professional development to deepen and build teacher knowledge and understanding in order to support equitable teaching and learning
- Model shared and public learning to make adult learning safe

**IF TEACHERS ARE TO DEEPEN LEARNING OUTCOMES FOR STUDENTS...**

- Continually deepen their knowledge of child development, content, and culturally sustaining pedagogy with colleagues and more expert others
- Continually build their understanding of their own and their students' racial, cultural, and identity development
- Learn in and from context and see the impact of instructional decisions
- Commit to working toward a shared understanding of ambitious teaching and learning

AMBITIOUS AND EQUITABLE STUDENT LEARNING EXPERIENCES AND OUTCOMES

**KEY**

LEARNER

FACILITATOR    CONTENT

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We touch briefly here on the research we use with partners to help them envision the nature of the learning required at each level of their Throughline. Drawing from scholarship on effective teacher education and professional learning, we establish this foundational understanding with partners: If teachers are going to generate deeper and more equitable learning experiences for students in every classroom, they will need opportunities to learn from colleagues and others with more expertise to augment their content knowledge, pedagogy, understanding of child and adolescent development, and also how instruction intersects with culture, race, and other identities. These ongoing and interdependent learning opportunities with coaches and peers are most productively anchored in the particular curriculum that teachers use on a daily basis, allowing teachers to learn in and from practice, observe experts modeling

enactment, and develop agency through principled adaptation of their materials (Ball, Thames, & Phelps, 2008; Darling-Hammond, Hyler, & Gardner, 2017; DeBarger, Penuel, Moorthey, Beauvineau, Kennedy, & Boscardin, 2016; Gallagher, 2016; Stosich, 2016a; Weiner & Pimentel, 2017). If this is the case for teachers, then what are the implications for principals' knowledge and skills? What learning experiences do principals need if they are to generate the organizational coordination necessary to produce sustainable student achievement gains (Robinson et al., 2017).

Beginning with a vision for ambitious and equitable classroom instruction rooted in specific disciplinary content, the Throughline depicts the nature of the learning experiences teachers would ideally create for students and backs them out to the learning experiences principals would need to create for teachers in order for them to enact this classroom vision with success. Moving further outward is the core triangle depicting the required learning experiences for principals if they are to create these conditions for teachers, with implications in turn for the knowledge and skills of those who support principal learning, including supervisors, departments of curriculum and instruction, instructional coaches, or improvement partners.

As outlined in research on instructional leadership, distributed leadership, and school-level improvement, principals must possess a host of capabilities. To start, they must be able to create conditions of trust or psychological safety for shared learning among staff, support the purpose and process of the work of teacher teams tied to an improvement strategy, and strategically deploy access to expertise (Bryk, Sebring, Allensworth, Easton, & Luppescu, 2010; Louis, Dretzke & Wahlstrom, 2010; Forman, Stosich, & Bocala 2017; Spillane, Halverson, & Diamond, 2001). This often requires developing principals' knowledge and skill, as well as shifting their mindsets. With shared instructional leadership, the principal is positioned as a leader of public learning rather than as an instructional expert who develops teachers via individual feedback, evaluation, and the provision of one-off professional development days (Marks & Printy, 2003). Once these required capabilities have been established, we guide our partners to use the Throughline to back out to the learning opportunities their district must create for principals with consideration for the structures, the learning sequence, and the capabilities of principal learning facilitators.

For example, districts must consider the following: Who in their system is responsible for teaching principals to effectively share leadership on a school leadership team? How can they develop teacher agency and voice without abdicating control over an instructional vision? How can they orchestrate the organizational shifts required for teacher leadership to meaningfully take hold? Recent studies of professional learning for principals attest to the complexity of this work (Goldring et. al, 2018; Leithwood, Seashore Louis, Anderson, & Wahlstrom, 2004; Johnson, Reinhorn, Charner-Laird, Kraft, Ng, & Papay 2014; Stosich, 2016; Thessin, in print; Weiner, 2016). Those responsible for this layer of professional learning are often promoted from being successful principals themselves, and the conception of the principal as lead learner may differ significantly from the practice that worked well for them as school leaders. Have those responsible for principals' development had the opportunity to reconceive the role of the successful principal as one who provides clear instructional goals for teachers' professional development? Is there opportunity to learn from

the district leaders responsible for curriculum and instruction what it is that principals must do to ground professional development in robust theories of learning?

A district superintendent does not need to know how to teach a high-level math class or promote social-emotional learning in a pre-K classroom. However, superintendents are responsible for all of the learning opportunities that emanate out to children from their office. Given the centrality of curricular materials to teacher learning, what curriculum, interventions, or published materials does a district invest in and have they been vetted for their ability to move individual students along a trajectory to achieve desired learning goals (DeBarger et al., 2016)? How do principal supervisors and curriculum and instruction teams work together intentionally—as complements and supplements to each other—to equip principals with a coherent narrative of what teachers are learning in professional development and focusing on in their teams and classrooms, and why? And if district leaders espouse continuous and coherent learning for adults in the service of deeper outcomes for kids, how are the mandates from the top—which often dictate an urgent pace of change—creating or undermining efforts to work in this way?

Although the qualities of effective professional learning, distributed instructional leadership, and school-level capacity for improvement are well-established in research, the particular core triangles that comprise the Throughline and the nature of the learning required within each area will vary by district. The experiences that the Bank Street Education Center facilitates involve partners populating their specific Throughline so that it is keyed to a particular instructional improvement goal and their system context. What follows are examples of what working in this way with schools, systems, and school partner organizations has afforded us, including positive examples of shifts in mindset and practice. In the final section, we focus on aspects of our work that are still in development. Specifically, we share how we are working with partners to fill critical gaps in their Throughlines by seeking out particular forms of expertise from the field of education research.

## What the Throughline Affords Us: Lessons From the Field

The most immediate benefit we have seen from using the Throughline in six district contexts since 2016 is that it has helped our partners make the conceptual shift from understanding improvement as "implementing change" to identifying and organizing for the opportunities by which adults build requisite knowledge and skills. In this section, we highlight the promising changes to practice we have witnessed in partnerships with an executive cabinet and a district office charged with improving outcomes in ELA system-wide. We also highlight how the series of interconnected core diagrams has enabled us to make the notion of coherence concrete, ground leaders' efforts to articulate the logic of an instructional improvement strategy prior to implementation, and flag specific organizational structures or conditions that would need to shift to enable uptake of new practice at various levels of a system.

Over the course of an ongoing partnership with leadership in a mid-sized urban district, we have seen our approach bear fruit as systems leaders shifted from a strong initial compliance orientation to a focus on

supporting adult learning across every layer of their school system. Over the past three years, the district has established coordinated learning structures at the teacher, principal, and district level in order to advance their goals of improved practice in mathematics, ELA, and student accountable talk. Further, leaders have begun to focus on what discussion within these adult learning structures would sound like at every level of the system if it were able to advance district priorities, which now include developing principals' capacity to function as instructional leaders. The Chief Academic Officer and her team have also begun to consider the organizational and psychological factors necessary for professional learning communities across the district to thrive, and have begun to prioritize learning about how to grow emotionally intelligent teams. These leaders now routinely share their own "growing edges," or current focus areas for personal development, when speaking with leaders at other levels of the system. Where they once used language of compliance, they now actively model the importance of shared learning and acknowledge the need to support adults in their system as they navigate the personal risks this process entails.

We have also made productive use of the Throughline with central office content experts to unpack what their articulated visions of high-quality classrooms mean for leveraging and building teacher knowledge, understanding, and skills. In one large urban district, we worked with literacy coaches to make explicit the host of capacities implied by the foundational components of their vision for Tier 1 literacy instruction, such as "students engage with a large volume and wide range of texts selected for their specific reading level," or "students understand literacy learning as a continuum and set individual learning goals based on their current placement." In unpacking these two expectations, coaches recognized that they would need to cultivate a wide range of teacher capacites, including teachers' ability to: use data from a universal screener to identify learning needs and materials at the student level; understand the student literacy continuum and its aligned descriptive indicators; engage students in goal-setting against standards-aligned rubrics, and; support students to monitor their own progress for literacy growth and metacognition. After surfacing the adult learning required to reach their vision, coaches were positioned to propose substantive partnerships with school leaders and make their rationale for the plan understood.

Another benefit of using the Throughline is that it helps us challenge leaders to evaluate the potential of an improvement effort prior to implementation. Does it make sense to invest in principal supervisors' learning about new standards-aligned math practice? If so, how? And how will their enhanced knowledge of such practice have an impact on principals' work with teachers and teachers' achievements with their students? Are there gaps in this Throughline? One concrete question with which a district grappled was: Is it a worthwhile exercise for a district leadership team to invest time calibrating how they do learning walks with the principals they supervise? Taking the Throughline model in consideration helped to clarify an answer: Only if there is a clear theory of how the data generated by these learning walks will wend its way across linked adult learning communities to result in more substantive and equitable academic tasks for students. In other words, districts can use their personalized Throughline as a sounding board for their theory of action for instructional improvement and assess whether it is reasonable to expect that the strategies they propose will generate the adult learning required to achieve the desired student outcomes (Cobb et al., 2018).

Finally, we utilize the learning Throughline to heed the call from research that intermediary organizations attune themselves to district conditions that can potentially impede the transfer of learning (Weiner & Wulfin, 2018). The interconnected core diagrams make it concrete and clear that learning at any level of a system will cause reverberations in either direction, and we use the model with district leaders to call out organizational features that might stifle the ability of educators in any role group to transfer new understanding into practice. For example, we share with system leaders our experience with teacher teams that are seeking to apply new knowledge of stated versus enacted academic tasks. Often, this leads to teachers asking their principal to create regular opportunities for them to observe each other teach. Leveraging this teacher learning would require administrators to play an active role in shifting their own work priorities and resource use for this purpose, and professional learning opportunities are required to prepare principals for this change (Spillane, Parise, & Sherer, 2011; Weiner, 2016). Using the Throughline with district administrators enables us as intermediary actors to identify potential organizational constraints on  working with any role group and to generate strategies to explicitly promote coherence across professional learning opportunities. In this way, we maximize the potential for participants to influence their colleagues and key features of their organizational context in service of more positive and equitable outcomes for students.

## Filling in Gaps Where It Matters Most: Linking Student and Teacher Learning

In our use of the Throughline across the country in partnership with schools and school systems across every role group, we find practitioners readily appreciate the framing of instructional improvement as coordinated opportunities for adult learning. We have also found that district partners are well-equipped to apply the research outlined in the section above to surface and prioritize the learning experiences required at every level of their system until they reach those closest to the classroom. For while education research has made strides in identifying the structures and features of effective learning environments for teachers, the specific learning experiences teachers would have within these structures are as yet under-theorized (Webster, 2016). We speak here to the difficulty we face in helping partners to articulate the concrete forms of instruction required to produce powerful disciplinary thinkers and, as a consequence, to name the specific intellectual capacities teachers would need to acquire before successfully enacting them in classrooms.

Ideally, a vision for ambitious and equitable instruction serves to orient an improvement journey, but we have come to understand that the ability to create a vision with enough specificity and depth to inform an arc of teacher learning requires access to particular forms of expertise. For example, while teachers, principals, and central office personnel are able to create a vision for a powerful science classroom in which students are "engaged in hands-on exploration" or "making connections between disciplinary concepts and the world around them," they are not usually prepared to articulate how students come to develop coherent understandings of key concepts in a science classroom or the practices with which teachers help students build and use theories to explain their world (Furtak & Penuel, 2019; National Research Council,

2012, as cited in DeBarger et al., 2017). This level of expertise around key disciplinary ideas, practices, or strategies for eliciting and making use of student thinking, is required to design a sensible series of goals for teacher learning—the very goals a professional learning system is designed to support.

In an ideal world, we agree with the position that many districts would currently benefit from co-designing adult learning experiences within research-practice partnerships as a means to access these critical forms of expertise (Penuel & Gallagher, 2017). In the interim, we have begun to seek out scholarship that explicitly connects student and teacher learning. One such example is the Teaching for Robust Understanding (TRU) framework and associated clinical tools. TRU materials are anchored in five dimensions of teaching identified by research as critical for student knowledge acquisition and are organized explicitly to support professional learning communities so that adults can focus their learning in deliberate and useful ways (Louis & Baldinger, 2016). By drawing on research in education that drills down to the particular forms of practice required to bring about a new vision for student learning, we grow capacity—our partners' and our own—to understand the arc of teacher learning the system must support.

When we work alongside practitioners to identify the critical capacities implied by an improvement effort and co-construct the adult learning their system must support, we begin with the values that make a vision worthwhile. What experiences will enable students to gain social, emotional, and cognitive skills and develop positive academic identities? (Jackson, K., 2019) These are complex and worthwhile issues to investigate with colleagues, and Bank Street's own efforts have historically paid close attention to aspects of adult development in relationship to these challenging leadership tasks (Nager & Shapiro, 2007). We believe that leaders' experiences in their own personal learning relationships will influence their practice and ultimately the culture of their schools and systems (Robertson, 2009). If we can use a model like the Throughline to help adults connect their professional selves to their sense of meaning and purpose, we can make incremental progress toward a system designed to make children feel heard and respected (Kegan & Lahey, 2009).

# References

The Aspen Institute Education & Society Program. (n.d). Developing a professional learning system for adults in service of student learning [PDF file]. Retrieved from https://assets.aspeninstitute.org/content/uploads/2018/02/ Developing-a-Professional-Learning-System-for-Adults-in-Service-of-Student-Learning-6.pdf?_ga=2.197196527.1797060171.1562700522-674783199.1562700522

Ball, D. L., Thames, M. H., & Phelps, G. (2008). Content knowledge for teaching: What makes it special? *Journal of Teacher Education, 59(5),* 389-407.

Borko, H. (2004). Professional development and teacher learning: Mapping the terrain Educational Researcher, 33(8), 3-15.

Bryk, A.S., Sebring, P.B., Allensworth, E., Easton, J. Q., & Luppescu, S. (2010). *Organizing schools for improvement: Lessons from Chicago.* Chicago, IL: University of Chicago Press.

Cobb, P., Jackson, K., Henrik, E., & Smith, T. M. (2018). *Systems for instructional improvement: Creating coherence from the classroom to the district office.* Cambridge, MA: Harvard Education Press.

Cohen, D. K., & Ball, D. L. (1999). *Instruction, capacity, and improvement.* CPRE Research Report Series RR-43. Philadelphia, PA: Consortium for Policy Research in Education, University of Pennsylvania.

City, E. A, Elmore, R.F., Fiarman, S.E., & Teitel, L. (2009). *Instructional rounds in education: A network approach to improving teaching and learning.* Cambridge, MA: Harvard Education Press.

Darling-Hammond, L., Hyler, M.E., & Gardner, M. (2017). *Effective teacher professional development.* Palo Alto, CA.: Learning Policy Institute.

DeBarger, A. H., Penuel, W. R., Moorthey, S., Beauvineau, Y., Kennedy, C. A., & Boscardin, C. K. (2017). Investigating purposeful science curriculum adaptation as a strategy to improve teaching and learning. *Science Education,* 101 (1), 66-98. doi: 10.1002/sce.21249

Doyle, W. (1983). Academic work. *Review of Educational Research, 53*(2), 159-99.

Forman, M.L., Stosich, E. L., & Bocala, C. (2017). *The internal coherence framework: Creating the conditions for continuous improvement in schools.* Cambridge, M.A: Harvard Education Publishing Group.

Furtak E.M., & Penuel W.R. (2019). Coming to terms: Addressing the persistence of 'hands-on" and other reform terminology in the era of science as practice. *Science Education, 103,* 167–186.

Gallagher, H. A., (2016). *Professional development to support instructional improvement: Lessons from research.* Menlo Park, CA.: SRI Education.

Goldring, E. B., Grissom, J.A., Rubin, M., Rogers L. K., Neel, M., & Clark, M.A. (2018). *A new role emerges for principal supervisors: Evidence from six districts in the principal supervisor initiative.* Wallace Foundation, Retrieved from: http://www.wallacefoundation.org/knowledge-center/Pages/A-New-Role-Emerges-for-PrincipalSupervisors.aspx.

Grossman, P. L., Smagorinsky, P., & Valencia, S. (1999). Appropriating tools for teaching English: A theoretical framework for research on learning to teach. *American Journal of Education, 108,* 1–29.

Honig, M. I., Venkateswaran, N., & McNeil, P. (2017). Research use as learning: The case of fundamental change in school district central offices. *American Educational Research Journal, 54*(5), 938–971.

Jaquith, A. (2017). *How to create the conditions for learning: Continuous improvement in classrooms, schools, and districts.* Cambridge, M.A.: Harvard Education Press.

Johnson, S. M., Reinhorn, S. K., Charner-Laird, M., Kraft, M. A., Ng, M., & Papay, J. P. (2014). Ready to lead, but how? Teachers' experiences in high-poverty urban schools. *Teachers College Record, 116,* 1-50.

Kegan, R., Lahey, L.L., (2009). *Immunity to change: How to overcome it and unlock the potential in yourself and your organization.* Boston, MA: Harvard Business School Publishing Corporation.

Leithwood, K., K. Seashore Louis, S. Anderson, & K. Wahlstrom. (2004). How leadership influences student learning. Retrieved from http://www.wallacefoundation.org/

Louie, N. L., Baldinger, E. M., & the Algebra Teaching Study and Mathematics Assessment Project. (2016). TRU conversation guide: A tool for teacher learning and growth. Retrieved from: http://truframework.org

Louis, K.S., Dretzke, B.. & Wahlstrom, K. (2010). How does leadership affect student achievement? Results from a national US survey, *School Effectiveness and School Improvement, 21*(3), 315-336.

Marks, H. M., & Printy, S. M. (2003). Principal leadership and school performance: An integration of transformational and instructional leadership. *Educational Administration Quarterly, 39*(3), 370-97.

Munter, C. (2014). Developing visions of high-quality mathematics instruction. *Journal for Research in Mathematics Education, 45* (5), 584-635.

Nager, N. and Shapiro, E.K. (2007). A progressive approach to the education of teachers: Some principles from Bank Street College of Education. Bank Street Occasional Paper Series 18. Retrieved from https://educate.bankstreet.edu/occasional-paper-series/vol2007/iss18/

Penuel, W. R., & Gallagher, D. J. (2017). Creating research-practice partnerships in education. Cambridge, MA: Harvard Education Publishing Group.

Robinson, V., Bendikson, L., McNaughton, S., & Wilson, A. (2017). Joining the dots: The challenge of creating coherent school improvement. *Teachers College Record, 119* (9), 1-44.

Robertson, J. (2009). Coaching leadership learning through partnership. *School Leadership & Management, 29*(1), 39-49

Spillane, J. P., Halverson, R., & Diamond, J. B. (2001). Investigating School Leadership\Practice: A Distributed Perspective. *Educational Researcher, 30* (3),23–28.

Stein, M. K.,, Smith, M. S. , Henningsen, M. A., & Silver, E. A. (2009). *Implementing Standards-Based Mathematics Instruction: A Casebook for Professional Development. Second Edition.* New York, NY: Teachers College Press.

Stosich, E. L. (2016). Building teacher and school capacity to teach to ambitious standards in high-poverty schools. *Teaching and Teacher Education, 58,* 43-53.

Stosich, E. L. (2016a). Joint inquiry: Teachers' collective learning about the Common Core in high-poverty urban schools. *American Educational Research Journal, 53*(6), 1698-1731.

Thessin, R. A. (in press). Establishing productive principal/principal supervisor partnerships for instructional leadership. *Journal of Educational Administration.*

Webster, M. "A Decomposition of the Practices of High Quality Professional Development for Teachers," (PhD diss, McGill University, 2016)

Weiner, J. (2016). Under my thumb: Principals' difficulty releasing decision-making to their instructional leadership team. *Journal of School Leadership, 26,* 149-180.

Weiner, J., & Woulfin, S. L. (2018). Sailing across the divide: Challenges to the transfer of teacher leadership. *Journal of Research on Leadership Education, 13*(3), 210–234.