



SPANNING BOUNDARIES: LEADERSHIP NEWSLETTER

The goal of this project is not to provide the reader with the latest PK-20 research. I will, at times, summarize articles published in the last 12 months, yet the intent is to share what I think are relevant, practical, and potentially transformative concepts from existing PK-20 research. Not all research presented in this newsletter is of equal methodological rigor. You might question the validity and reliability of some of the papers I share, yet this does not suggest that interesting and potentially useful ideas cannot be derived from more questionable empirical practices. This belief is founded on what I think is the purpose of education research—it is not, as Marc Tucker writes, intended to be a prescriptive recipe to follow, but rather a set of ideas strung together to create effective systems for learning¹. You will see a lot of “might”, “can,” “maybe,” “suggest,” and other words that emphasize *possibility*, not certainty.

The SB Newsletter contains research briefs. Some of the links will take you to the full article, others to the abstract. As discussed in the SB Manifesto, this process requires *joint work*. Should you be interested in learning more about a specific article, you will need to access it via other means. You can also contact us to talk more about it. Importantly, some papers are harder to summarize in two pages and require you to explore the original text to get a full understanding of the relevant concepts.

Some concepts will feel obvious. You might, as a school or district leader, be performing some of the techniques explained in the provided research. I experienced this as I combed through research on classroom instruction and organizational change. These papers added much needed conceptual depth and language to the work I had been doing, and continue to do. I hope they do the same for you.

The process of editing this newsletter confirmed for me (and I hope this remains true) the formatting template for each article. A week before publishing, I felt good about the content. After making significant changes throughout the first few iterations of this product, I found myself making small and often superficial edits. I made a decision to print out this work. Sitting down with a hard copy and blue pen—something I used to do frequently but now often do on an iPad app—was an illuminating experience. I made additional not-insignificant changes that improved what you are reading today. Each article is one page, front and back. I want to save as many trees as possible, but interacting with a hard copy might increase your engagement.

Finally, future newsletters will not have as extensive an intro page. I felt it important to explain my “why” so that the reader better understands what I’m trying to do.

Happy Reading!

Matt Schneidman



The SB Leadership Newsletter, Volume 1, Issue 1 December 2020

Supporting remote or blended instruction and managing a disruptive change to traditional schooling practices are unifying themes of this first issue. The referenced papers are intended to help education leaders consider, in both theoretical and practical terms, their experiences as well as those of their students, parents, and teachers during a time of Covid. The three articles included are:

- Park, V., Daly, A. J, Guerra, A. W. (2012). Strategic framing: How leaders craft the meaning of data use for equity and learning. *Educational Policy*, 27(4), 645-675. <https://doi.org/10.1177/0895904811429295>
- Richardson, J. W., & Sterrett, W. L. (2018). District technology leadership then and now: A comparative study of district technology leadership from 2001 to 2014. *Education Administration Quarterly*, 54(4), 589-616. <https://doi.org/10.1177/0013161X18769046>
- Farrell, C. C., & Coburn, C. E. (2017). Absorptive capacity: A conceptual framework for understanding district central office learning. *Journal of Educational Change*, 18(2), 135-159. <https://doi.org/10.1007/s10833-016-9291-7>

Strategic Framing explores how leaders use framing techniques to infuse equity into data use conversations. In a time of Covid, data can take on new significance and meaning. For example, what does attendance look like in a virtual learning environment? How should teachers make sense of assessment data when students have not had a single day of in-person instruction? How responsible are teachers for students in a remote or blended environment? It is easy to attribute student outcomes to factors outside of the school's control (see B&M in the teacher newsletter). Although there might be some validity to these claims, schools and teachers are still responsible for the learning of all students. Strategic framing is a leadership technique to literally re-frame data conversations in order to address deficit mindsets and challenge teachers to rethink how to best support historically marginalized students.

District Tech Leadership explores how “tech savvy superintendents” think about (a) the role of technology within their organizations, and (b) their roles in supporting increased tech adoption. The increasing importance of technology in a post-Covid world likely requires school and district leaders to be more sophisticated individual users of tech and organizational leaders of tech integration. This article is [accompanied by an activity](#) that encourages Sups (and other district and school admin) to reflect on their tech capabilities, so that they might better act as technology leaders within their respective organizations. Another resource has been developed (but not provided here) that addresses tech capacity at an organizational level. Feel free to reach out for more information about this.

Absorptive Capacity (ACAP) is a conceptual framework ([full text linked here](#)) for district leaders to more thoughtfully execute on strategic implementations. Although focused on relationships with external partners, ACAP can also be used for internal strategic initiatives. There is an increased need for new technologies as a result of Covid. These technologies are often provided by external partners and do not always sync with an organization's instructional philosophy. ACAP can be used to identify and address those inconsistencies, which creates an opportunity for central office personnel to be more thoughtful about expectations, interactions, and outcomes of external partnerships. It can also be used to identify organizational strengths and weaknesses that might enhance or inhibit critical strategic initiatives.



STRATEGIC FRAMING

Title: Strategic Framing: How Leaders Craft the Meaning of Data Use for Equity and Learning

Author(s) + Year: Vicki Park, Alan J. Daly, Alison Wishard Guerra (2012)

Topic: Data Use. Equity. Leadership.

Overview

The passage of No Child Left Behind in 2001 increased the salience of accountability policies to measure school performance². As a result, data-driven decision making (DDDM) “has flourished as a pivotal tool for educational reform”³. Just as there is more than one way to skin a cat, there are various approaches to DDDM. In this paper, Park explored “(a) how leaders construct meaning around the implementation of DDDM, (b) how they frame that meaning for others, and (c) how teachers make sense of data use within those frames”⁴. They found that school and district leaders strategically developed and implemented “diagnostic, motivating, and prognostic” frames in order to promote a culture of data use and continuous improvement that addressed issues of inequity.

Theory

Park’s conceptual framework is drawn from two sources of literature: *sensemaking of school reform*, and *frame analysis*. Sensemaking is predicated on the belief that (a) individuals actively construct knowledge; (b) learning is a situated and interactive process, meaning that context influences both what is learned and how it is learned; and (c) interpretation influences subsequent action. “To talk about sensemaking is to talk about reality as an ongoing accomplishment that takes form when people make retrospective sense of the situations in which they find themselves and their creations”⁵. Although central to their analysis, the absence of the “dynamics of power and ideology”⁶ limits the usefulness of sensemaking as a standalone theory in this situation. Social actors in positions of formal and informal authority can have more power to shape social reality—they have greater influence over the ways that key stakeholders make sense of their environments⁷. To overcome this limitation, Park combines sensemaking with frame analysis. Frame analysis provides an “analytic architecture” to interpret how individuals in positions of authority shape critical conversations focused on data use. These school and district leaders influence how individuals make sense of and address organizational problems.

Research

Park identifies three categories of strategic framing: (a) diagnostic frames, (b) motivating frames, and (c) prognostic frames. *Diagnostic framing* involves defining a problem, assigning blame and/or responsibility, and suggesting attributions. It is “the what” and “the who”—what problem does the data reveal and who is responsible (for both the problem and a potential solution). *Prognostic framing* is similar to strategic planning—it is “the how”. How can an organization go about addressing a problem once that problem has been identified? *Motivating frames* are an attempt to articulate a rationale for action—they are “the why.” Although these framing tactics are presented as distinct categories, Park writes that “the process of crafting frames and the manner in which they are used are often mutually reinforcing, interdependent, and dynamically build upon one another”⁸. No one frame on its own is enough. For example, diagnostic frames alone cannot address issues of inequity—simply identifying a problem and developing a strategic plan to address that problem is unlikely to succeed. Educators need a compelling reason in order to “buy-in” to a new strategic initiative⁹.

Park and her colleagues observed how school and district leaders adopted sensemaking frames in order to persuade others of the import of DDDM. Leaders applied specific *diagnostic frames* to confront the student achievement opportunity gap—part of this included “redefining the concept of caring for all students and ensuring academic achievement”¹⁰. *Motivating frames* focused on collectively addressing systemwide and student improvement. *Prognostic frames* were used to emphasize the benefits of incremental change. Strategic framing allowed school and district leaders to use data to address a culture of low expectations, and shift what previously felt like personal attacks on teachers to an increased emphasis on outcomes.



What It All Means...and What Can I Do With This

“Data highlighting unequal access to college-preparation classes provided a *launching pad* [emphasis added] for the district to have discussions between staff members about their responsibilities and expectations for students”¹¹. This is an example of a productive use of data—as a *tool* to ignite conversations critical to addressing issues of inequity in the K12 space¹². However, it is unlikely that the introduction of data on its own will impact teacher practices or beliefs¹³. On the contrary, data can act to reinforce deficit mindsets and perpetuate inequitable outcomes¹⁴—“teacher practice and responses to policy are largely driven by teachers’ prior knowledge, beliefs, and values, which may lead to differences in implementation (Coburn, 2001, 2005; Spillane, Resier, & Reimer, 2002)”¹⁵. School and district leaders interested in challenging a deficit mindset in order to promote the growth of historically underserved communities might find strategic data framing to be a valuable technique. They can and should reflect on the ways that they, their district, and the schools within their district frame data conversations in order to achieve organizational goals. Developing and implementing diagnostic, prognostic, and motivating frames might begin to *shift* conversations in order to more critically and thoughtfully address issues of inequity, yet it must be done, for lack of a better word, strategically.

Possible Critique

New approaches to school and district reform do not exist in a vacuum—they build upon pre-existing organizational and individual assumptions and capacities¹⁶. The adoption of a strategic initiative—such as an increased focus on DDDM coupled with the use of strategic data framing to encourage an increased focus on equity—is dependent on the manner in which individual educators make sense of that initiative. It is not unlikely that attempts to shift data conversations will be met with teacher resistance. Countering that resistance requires a substantial and *sustained* commitment to establishing a new method of utilizing data. School or district leaders might need to observe and guide PLC data conversations over the course of a few months or even years—a task that few leaders have the time for.

Leaders observed in this study used prognostic frames to highlight the benefits of incremental change. They believed that small changes over time might amount to significant change in the long-term. Extant research suggests that more immediate and profound changes are required to confront the inertia of the K12 system and transform the learning experiences of historically marginalized populations¹⁷.

Response to the Critique

The critiques are real. Attempts at strategic framing need to be accompanied by intensive direct teacher support. There is a lot more to this critique that will be explored in future newsletters and podcasts. There is also more to be explored on the debate between incremental change vs. radical change—this is a topic I am particularly passionate about.



“TECH LEADERSHIP IS JUST GOOD LEADERSHIP”

Title: District Technology Leadership Then and Now

Author(s) + Year: Jayson W. Richardson & William Sterrett (2018)

Topic: Technology Integration. Leadership.

Overview

“In today’s K-12 schools, learning and technology cannot be seen as separate silos. Neither can they be seen as responsibilities of people in formal technology roles. It is thus vital that school administrators actively engage in the way technology is integrated into the school environment (Anderson & Dexter, 2005; Sheninger, 2014)”¹⁸. In a 2018 paper, Richardson and Sterrett (“R&S”) interview “tech-savvy award winning superintendents” to learn (a) how this group of “innovative leaders” thinks about the role of technology in the K12 space, and (b) how their priorities change over time. These superintendents (Sups) believe that central office leaders can foster more sophisticated and meaningful integration of technology into the classroom by:

1. Developing a broader vision of technology that includes multiple stakeholder groups;
2. Focusing on constant infrastructure improvement (both hardware and software);
3. Using technology to enhance dialogue across stakeholder groups;
4. Creating opportunities for individuals to develop key tech knowledge and skills; and
5. Embracing the unknown.¹⁹

The manner in which “tech-savvy” superintendents have approached these five tasks has changed and will continue to change as the role and impact of technology in the K12 environment rapidly evolves.²⁰

Theory

The extant research on tech leadership is grounded in the belief that school leadership matters²¹—technology leadership is “just good school leadership”. Marzano’s work on first- and second-order change is an additional lens used to understand the role of technology adoption in the K12 space²²:

“First-order change [...] is focused on extending the work of the past, working within existing paradigms, and implementing change within existing norms, knowledge, and skill sets. Whereas second-order change, or adaptive change, requires that all stakeholders engage in the change in fundamentally different ways. Second-order change breaks from the past, shifts away from existing paradigms, and is often conflicted with prevailing norms, given it requires new knowledge and a change in skill sets. First-order change can be thought of as routine, whereas second-order change can be thought of as dramatic”²³.

Tech-savvy school leaders theoretically consider the ways that technology can be used more for second-order change than making improvements around the proverbial edges.

Research

R&S compare the priorities, successes, and challenges faced by two groups of “tech-savvy award winning superintendents”—Group 1 won the award between 2001 and 2010, Group 2 between 2011 and 2014. They found that tech-savvy superintendents use technology as a tool to foster second-order change. These Sups believed that central office personnel should:

1. *Foster a Broad Shared Vision:* Developing a broader vision for technology should include multiple stakeholder groups. It should be more about than “the stuff”. It must also be accompanied by an examination of the appropriate intersection of technology and pedagogy—specifically, how technology can be used to improve teaching and learning.
2. *Constantly Consider Strategic Infrastructure Improvements:* Maintaining and improving upon tech infrastructure requires up-to-date hardware and software. Group 1 Sups focused on hardware and the



search for “significant” funding to support the initial development of a tech infrastructure. Group 2 focused more on smarter spending to maintain and enhance existing technologies. According to one Sup, this required “district leaders to think differently at the central level”²⁴ in order to allocate resources more strategically.

3. *Embrace Dialogue Through Modern Communication Tools*: Group 1’s emphasis was on communicating to stakeholders while Group 2 focused much more on how to use technology to communicate *with* stakeholder groups.
4. *Focus on Individualized Development*: This can be best summarized as a shift away from one-size-fits-all PD to professional learning experiences more tailored to each individual’s (a) skill level, (b) tech interests, and (c) classroom context.
5. *Acting the Unknown*: Group 1 Sups were more focused on being risk takers while Group 2 Sups were more concerned with overcoming fear—fear of the unknown and fear of failure. One Sup stated that “We don’t have to know all the answers. We have to be willing to learn and to model that learning”²⁵.

Engaging a broad group of stakeholders can be a significant task. Sups can face teacher resistance to what might feel like transformative pedagogical imperatives. Knowing how best to allocate limited funding sources can be a frustrating experience. Communicating *with* parents can be a challenge in low-SES communities that lack the infrastructure to engage in more sophisticated tech use. Tech integration also takes time. District leaders are not always given the space to build capacity over the course of five to ten years. As a result, some district leaders might emphasize the need to buy new hardware—shiny new stuff functioning as perceived progress yet failing to solve the actual problem, i.e. identifying the intersection of pedagogy and technology and working toward this equilibrium.

What It All Means...and What Can I Do With This

R&S provide a framework for superintendents to more thoughtfully consider both the exciting opportunities and structural challenges inherent in becoming a tech-savvy organization. Their blueprint can act as a conversation starter—maybe even a checklist of key considerations. Leaders engaging in that process will do well to acknowledge that even “award-winning” tech-savvy leaders can face seemingly insurmountable obstacles to second-order change. This, however, should not deter them from considering how best to integrate technology into the K12 learning experience—especially considering the elevated role of tech in a Covid/post-Covid world. “Digital innovations have changed both teaching and learning (Bonk, 2009; November, 2010; Wagner, 2008). November (2010) wrote that technology innovations, such as online learning, have changed ‘the relationships between school and home, and the traditional boundaries of school’ in many aspects (p. 88)”²⁶. Sups interested in moving beyond the stuff might use this [Tech Envisioning](#) activity to begin to develop a plan that addresses the complexities of tech use.

Possible Critique

eSchoolNews might not be the best judge of what it means to be a tech-savvy superintendent. Therefore, the sample is not representative of what it actually means to be a good technology leader. There is also little attention to the role of equity in the allocation of technological resources. Paul Gorski, Joanna Goode, and Kimberly Scott (among others)²⁷ have been writing about the digital divide since the early 2000s. The Sups in this study do not speak much to inequities in access—both the “stuff” and what’s done with that stuff—within and across K12 organizations.

Response to the Critique

The critiques have merit. The absence of the digital divide is glaring in the way that Sups talk about technology leadership. There also appeared to be a misunderstanding of the full purpose of tech in the K12 classroom. Although one might question eSchoolNews’ capacity to be a reliable arbiter of good tech leadership, the authors address this well in their paper—it is not a concern of mine. Furthermore, this paper confirmed a lot of what I saw in the three years I spent interacting daily with district leadership tasked with infusing tech into the classroom environment.



ABSORPTIVE CAPACITY: A FRAMEWORK FOR ORGANIZATIONAL LEARNING

Title: *Absorptive Capacity*: A Conceptual Framework for Understanding District Central Office Learning

Author(s) + Year: Caitlin C. Farrell & Cynthia E. Coburn (2016)

Topic: Org Science. K12 Reform. Policy.

Overview

“Across the globe, there is growing pressure on school systems to improve teaching and learning. In the United States, school districts are critical players in systemic educational change. [...] Given limited resources and capacity, many school district central offices—like other local governance agencies in some countries—engage with external organizations and individuals for assistance in these reform efforts”²⁸. There is no shortage of external organizations—both for-profit and nonprofit—interested in working with school districts, service agencies, and state departments to support education reform efforts. The size of the global education technology industry—one component of a larger market for external partnerships—was valued at over \$75 billion in 2019 and is expected to grow to over \$280 billion by 2027²⁹. Farrell and Coburn (F&C) point out that these partnerships, despite seemingly good intentions and a genuine interest in school improvement, are not always successful. They draw on *absorptive capacity* (ACAP), a theory derived from organization science, to develop a conceptual framework that can be used as a tool for K12 organizations to better understand how they might learn from external partners.

Theory

ACAP as a construct first gained popularity after Cohen and Levinthal’s highly-cited 1990 article, *Absorptive Capacity: A New Perspective on Learning and Innovation*, appeared in *Administrative Science Quarterly*³⁰. In the 30 years since its publication, ACAP has been used as an analytical tool, primarily in the for-profit world, to understand how organizations learn from external partners. It has been defined as “the ability to recognize the value of new information, assimilate it, and apply it in novel ways as part of organizational routines, policies, and practices”³¹. An organization’s ability to learn from others is critical if it is to “leverage work with external individuals or groups for *productive* [emphasis added] change”³². F&C modify this construct to make it applicable to K12 leadership. They argue that without a sophisticated understanding of how to learn as an organization, school districts will struggle to make good use of external partnerships—a critical loss considering the breadth and depth of resources dedicated to these relationships.

ACAP is a highly conceptual yet practically grounded construct that K12 organizations can use to develop increased capacity to work with and *learn* from external organizations. Increased absorptive capacity can lead to (a) more thoughtfully planned and implemented strategic initiatives, (b) the modification and/or creation of structures to support enhanced organizational learning, (c) more effective use of precious district resources, (d) more critical examination of the ideas and products developed by external partners, and (e) an improved student learning experience through increased coherence and alignment across district projects. ACAP is also a path-dependent construct, meaning that its quality is dependent on prior knowledge and skills. To simplify, improved ACAP begets improved ACAP. This positive feedback loop can also operate in the opposite direction: reduced capacity, often due to rigid organizational forms, can lead to further diminished capacity³³.

Research

F&C attempt to understand “when and under what conditions partnerships with a district are likely to enable districts to learn from external partners in ways that support [...] change”³⁴. They identify four core components that comprise a district’s absorptive capacity: (a) prior knowledge, (b) communication pathways, (c) strategic knowledge leadership, and (d) resources. The level of a district’s absorptive capacity can determine the productiveness of the interaction between external partner and district. This interaction is also influenced by the



qualities of the external partner: the nature of the guidance they provide, their flexibility and adaptability, and the similarity of norms and work practices between both actors. The interaction itself is mediated by inter-organizational routines and tools as well as informal social interactions. These interactions can determine the depth and impact of organizational learning (often in the form of collective knowledge) as well as changes to policy and internal routines. As a cycle, this learning impacts an organization's absorptive capacity, either building upon it (improved external partnerships) or further limiting it (less productive interactions).

What It All Means...and What Can I Do With This

"Today's school districts face significant challenges in implementing ambitious instructional reforms"³⁵. This statement is even more relevant today. The world of K12 education is facing what Van den Bosch, Volberda, and de Boer would call a virtually unprecedented "turbulent knowledge environment"³⁶. In such an environment, organizations need to increase absorptive capacity by modifying or developing organizational forms that increase their ability to absorb and apply new knowledge³⁷. School districts learning how to navigate this new reality require knowledge and skill development that should not and cannot be accomplished in isolation. External partners provide a potentially invaluable source of critical knowledge for K12 organizations, yet these partnerships are fraught with challenges. ACAP as modified by Farrell and Coburn provide central office and school admin (as well as external partners) a potential blueprint to begin addressing organizational structures critical to the success (or lack thereof) of the myriad of partnerships that districts, state departments, and service agencies engage in.

Possible Critique

F&C are academics. The framework they propose is far too conceptual to be pragmatic. It might serve a purpose as an analytical tool, but it is not practical for school districts interested in improving upon external partnerships. Furthermore, what exactly is an organization if not a collection of individuals? Can an *organization* learn? Can it learn how to learn?

Response to the Critique

My hope is to remove opinion as much as possible from this newsletter—I plan to use my blog to expound upon the construct presented here. However, I think my experience in this space is relevant. Having worked for over four years supporting K12 implementations, I have seen organizations struggle to implement new products. Incoherence across competing district priorities, the absence of prior knowledge, the misallocation of resources, the inability to communicate well across stakeholder groups, and the lack of "strategic knowledge leadership" limit a district's ability to engage productively with external partners. ACAP is a concrete framework that can be used to diagnose and transform organizational structures in order to more successfully work with external partners and, just as importantly, implement strategic initiatives in ways that support a better student learning experience.



Notes

- ¹ Tucker 2019.
- ² Park et al. 2012.
- ³ Ibid, p. 646.
- ⁴ Ibid, p. 648.
- ⁵ Weick 1995, p. 15.
- ⁶ Park et al. 2012, p. 647.
- ⁷ Ibid.
- ⁸ Ibid, p. 652.
- ⁹ Ibid. 2012.
- ¹⁰ Ibid, p. 652.
- ¹¹ Ibid, p. 655.
- ¹² See Datnow and Park 2018.
- ¹³ See Bertrand and Marsh 2015. Datnow et al. 2018. Evans et al. 2019. Marsh et al. 2015.
- ¹⁴ Ibid.
- ¹⁵ Bertrand & Marsh 2015, p. 862.
- ¹⁶ See Spillane et al. 2002; Weick et al. 2005.
- ¹⁷ See Biesta and Safstrom 2018. DiMaggio and Powell 1983. Hanson 2001. Ladson-Billings 2003. Stovall 2018.
- ¹⁸ Richardson and Sterrett 2018, p. 591. In my time supporting tech integration at the district and school level, my colleagues and I observed two general categories of tech directors—those who are more comfortable with “boxes, wires, and pliers,” and those who have an instructional background. Regardless of which category the tech director at an organization fell into, the “tech work” was often siloed to the tech department. This is not ideal under the best of circumstances. It becomes far more problematic when the tech director is more the boxes, wires, and pliers type. This is not to say that I did not interact with boxes, wires, and pliers tech directors who were incredibly thoughtful about the intersection of technology and pedagogy (TPACK, see Mishra and Koehler 2006), yet this was a rare occurrence.
- ¹⁹ Ibid.
- ²⁰ McLeod et al. 2015.
- ²¹ Ibid.
- ²² Richardson and Sterrett 2018.
- ²³ Ibid, p. 592.
- ²⁴ Ibid, p. 604.
- ²⁵ Ibid, p. 609.
- ²⁶ Ibid, p. 590.
- ²⁷ See Goode 2006. Gorski 2002. Scott and White 2013.
- ²⁸ Farrell and Coburn 2017, p. 136.
- ²⁹ See <https://www.globenewswire.com/news-release/2020/11/17/2128026/0/en/Global-234-Billion-Edtech-and-Smart-Classroom-Markets-2020-2027-Cloud-Based-Solutions-Fueling-the-Adoption-of-EdTech-Solutions.html>.
- ³⁰ Cohen and Levinthal 1990.
- ³¹ Farrell and Coburn 2017, p. 136.
- ³² Ibid, p. 136.
- ³³ Todorova and Durisin 2007.
- ³⁴ Farrell and Coburn 2017, p. 140.
- ³⁵ Farrell et al. 2019, p. 956. The 2017 Farrell and Coburn paper summarized in this newsletter is theoretical. The 2019 Farrell et al. paper referenced here is an empirical study using ACAP as an analytical tool. The authors argue that differences in district implementation are “due to organizational conditions that foster absorptive capacity and to the nature of department-partner interactions” (p. 955).
- ³⁶ Van den Bosch et al. 1999.
- ³⁷ Ibid.



Bibliography

- Bertrand, M., & Marsh, J. A. (2015). Teachers' sensemaking of data and implications for equity. *American Educational Research Journal*, 52(5), 861-893. <https://doi.org/10.3102/0002831215599251>
- Biesta, G., Safstrom, C. A. (2018). A manifesto for education. *Praxis Educativa*, 22(2), 20-36. <http://dx.doi.org/10.19137/praxiseducativa-2018-220203>
- Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1990), 128-152. <https://doi.org/10.2307/2393553>
- Datnow, A., Choi, B., Park, V., St. John, E. (2018). Teacher talk about student ability and achievement in the era of data-driven decision making. *Teachers College Record*, 120(4).
- Datnow, A., & Park, V. (2018). Opening and closing doors for students? Equity and data use in schools. *Journal of Educational Change*, 19, 131-152. <https://doi.org/10.1007/s10833-018-9323-6>
- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147-160. <https://doi.org/10.2307/2095101>
- Evans, M., Teasdale, R. M., Gannon-Slater, N., Londe, P. G. L., Crenshaw, H. L., Greene, J. C., & Schwandt, T. A. (2019). How did that happen? Teachers' explanations for low test scores. *Teachers College Record*, 121(2).
- Farrell, C. C., & Coburn, C. E. (2017). Absorptive capacity: A conceptual framework for understanding district central office learning. *Journal of Educational Change*, 18(2), 135-159. <https://doi.org/10.1007/s10833-016-9291-7>
- Farrell, C. C., Coburn, C. E., & Chong, S. (2019). Under what conditions do school districts learn from external partners? The role of absorptive capacity. *American Educational Research Journal*, 56(3), 955-994. <https://doi.org/10.3102/0002831218808219>
- Goode, J. (2006). If you build teachers, will students come? The role of teachers in broadening computer science learning for urban youth. *Journal of Educational Computing Research*, 36(1), 65-88. <https://doi.org/10.2190/2102-5G77-QL77-5506>
- Gorski, P. (2002). Dismantling the digital divide: A multicultural education framework. *Multicultural education*, 10(1), 28-30.
- Hanson, M. (2001). Institutional theory and educational change. *Educational Administration Quarterly*, 37(5), 637-661. <https://doi.org/10.1177/00131610121969451>
- Ladson-Billings, G. (2003). Lies my teacher still tells: Developing a critical race perspective toward the social studies. In Ladson-Billings G. (Ed.), *Critical race perspectives on the social studies: The profession, policies, and curriculum* (pp. 1-11). Information Age Publishing.
- Marsh, J. A., Bertrand, M., & Hugué, A. (2015). Using data to alter instructional practice: The mediating role of coaches and professional learning communities. *Teachers College Record*, 117(4), 1-40.



- McLeod, S., Richardson, J. W., & Sauer, N. J. (2015). Leading technology-rich school districts: Advice from tech-savvy superintendents. *Journal of Research on Leadership Education*, 10(2), 104-126. <https://doi.org/10.1177/1942775115584013>
- Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6).
- Park, V., Daly, A. J., Guerra, A. W. (2012). Strategic framing: How leaders craft the meaning of data use for equity and learning. *Educational Policy*, 27(4), 645-675. <https://doi.org/10.1177/0895904811429295>
- Richardson, J. W., & Sterrett, W. L. (2018). District technology leadership then and now: A comparative study of district technology leadership from 2001 to 2014. *Education Administration Quarterly*, 54(4), 589-616. <https://doi.org/10.1177/0013161X18769046>
- Scott, K. A., & White, M. A. (2013). COMPUGIRLS' standpoint: Culturally responsive computing and its effect on girls of color. *Urban Education*, 48(5), 657-681. <https://doi.org/10.1177/0042085913491219>
- Spillane, J. P., Resier, B. J., Reimer, T. (2002). Policy implementation and cognition: Reframing and refocusing implementation research. *Review of Educational Research*, 72(3), 387-431. <https://doi.org/10.3102/003465430720003387>
- Stovall, D. (2018). Are we ready for school abolition? Thoughts and practices of radical imaginary in education. *Taboo: The Journal of Culture and Education*, 17(1), 51-61. <https://doi.org/10.31390/taboo.17.1.06>
- Todorova, G., & Durisin, B. (2007). Absorptive capacity: Valuing a reconceptualization. *The Academy of Management Review*, 32(3), 774-786. <https://doi.org/10.2307/20159334>
- Tucker, M. (2019). *Leading high-performance school systems: Lessons from the world's best*. ASCD.
- Weick, K. E. (1995). *Sensemaking in organizations*. Sage Publications.
- Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (2005). Organizing and the process of sensemaking. *Organization Science*, 16(4), 409-421. <https://doi.org/10.1287/orsc.1050.0133>
- Van den Bosch, A. J., Volberda, H. W., & de Boer, M. (1999). Coevolution of firm absorptive capacity and knowledge environment: Organizational forms and combinative capabilities. *Organization Science*, 10(5), 551-568. <https://doi.org/10.1287/orsc.10.5.551>