

Research Use as Learning: The Case of Fundamental Change in School District Central Offices

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Districts nationwide have launched efforts to fundamentally change their central offices to support improved teaching and learning for all students and are turning to research for help. The research provides promising guides but is challenging to use. What happens when central offices try? We explored that question in six districts using sociocultural learning theory to analyze 124 interviews, 499.25 observation hours, and approximately 300 documents. We found that central office administrators varied in their appropriation of five research-based ideas between and somewhat within

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districts. Prior knowledge and assistance from intermediary organizations proved necessary but not sufficient to support appropriation absent internal leaders who taught others how to use the research. These findings elaborate research use as a learning process that may require particular, intensive internal leadership.

KEYWORDS: district central office, research use, leadership, sociocultural learning

A growing number of school districts across the country have been exploring or initiating reforms that call for major changes in how their central offices support the ambitious equity goal of high-quality teaching and learning for each student and intentionally turning to what they consider “research” to guide the process. Unlike other district improvement efforts that focus on schools as the main or sole target, these reforms aim to fundamentally shift *central offices* to operate as support systems for improvements in teaching and learning in schools. Other improvement strategies involve central offices using research on schools, teachers, and students to inform decisions about school improvement choices such as textbook adoptions or curriculum frameworks; these strategies involve central office staff using research about *their own systems and practices* to guide how they themselves participate in school improvement.

These trends seem promising but challenging. Research highlights the importance of central offices to the improvement of teaching and learning at scale and has begun to provide guides for what central office staff do when they aim to realize such results (e.g., Honig, Copland, Rainey, Lorton, & Newton, 2010; Hubbard, Mehan, & Stein, 2006). However, the research calls for fundamental shifts in the traditional systems and work practices of central offices, and such changes are notoriously difficult to implement (Honig, 2003, 2006, 2009; Trujillo, 2013). Literature on knowledge utilization in bureaucratic organizations more broadly highlights the myriad reasons why staff of such organizations would not use such knowledge but does not reveal conditions that might support research use. By treating research use as an either-or binary (as used or not used), extant scholarship also risks missing cases in which practitioners may be taking important steps toward deeper research use (Levin, 2013; Nutley, Walters, & Davies, 2003). What happens when central office administrators engage with research that calls for fundamental shifts in how they work to support teaching and learning in all schools? Under what conditions, if any, do central office administrators buck predominant trends and seem to progress in actually using the research to engage in fundamental shifts in their own practice?

We explored these questions with an in-depth qualitative analysis of six school districts implementing reforms to fundamentally shift central office staff members’ daily work to support districtwide improvements in teaching and learning. All the districts intended to use various forms of research about central office administrators’ work practices to guide their process. Our

conceptual framework, derived from sociocultural learning theory (e.g., Tharp & Gallimore, 1991; Wenger, 1998), helped us move beyond research use as an either-or binary and focus our attention on the different degrees to which practitioners used research and the conditions involved when organizations use new information to engage in fundamental rather than routine change. These theories framed our investigation involving 124 interviews, 499.25 hours of observations, and reviews of approximately 300 documents.

We found that central office administrators used research to shift their practice, but to varying degrees as described by sociocultural learning theory. Central office staff deepened their use of research not in districts with high-quality assistance from intermediary organizations but in those where central office leaders themselves regularly took a teaching-and-learning approach to help their colleagues and staff integrate challenging ideas into their practice. These findings underscore the promise of understanding research use as a learning process and caution districts against overreliance on outside organizations to assist with such processes absent district leaders actively helping their staff learn to shift their practice.

Background

Various research on the relationship between central offices and school improvement could provide important guides for central offices in their efforts to realize excellent educational opportunities and outcomes for each student. For instance, some studies examined districts posting gains on standardized test scores (Togneri & Anderson, 2003) and improvement in chronically low-performing schools (Zavadsky, 2012) and associated certain central office actions with such results. Such work recommends central office leaders advance a vision focused on the improvement of teaching and learning and coherence among curriculum, assessments, and teaching practices. Other studies elaborate some general theories of central office behavior. For example, Daly and Finnigan (2010, 2011) use social network analytic methods to demonstrate that the relationships among and between central office and school staff may be consequential to implementation of improvement efforts; leaders might manipulate their social networks and specifically their communication patterns to improve implementation (see also Johnson & Chrispeels, 2010; Trujillo, 2013).

Other research elaborates the daily practices of central office staff—what they actually do day to day—that may be particularly consequential to supporting improved teaching and learning in schools. For example, Augustine and colleagues (2009) revealed that certain kinds of intensive, job-embedded professional development by central office coaches had a statistically significant effect on principals' time spent on instructional leadership. Anderson, Mascall, Stiegelbauer, and Park's (2012) research team showed that some central office instructional staff differentiated and improved the instructional support they provided to schools by using data from intensive, school-level

inquiry cycles to deploy support teams to schools for concentrated periods of time. A growing line of research on principal supervisors elaborates specific teaching moves that such central office staff use when researchers associated their practice with improved support for principals' growth as instructional leaders (Honig, 2012; Honig & Rainey, 2014).

Despite the potential usefulness of such research, the few studies on central office administrators' use of research indicate that such leaders tend to claim they use research but not actually demonstrate they do so in practice (Levin, 2010, 2013). Others show how central office administrators use research on schools to inform their decisions about what schools should do but not how they use research on central offices to change their own work. For instance, Coburn and colleagues (2009) examined how central office staff grappled with research on such topics as reading instruction to inform their decisions about which approaches to require of their schools. Farley-Ripple (2012) similarly claimed that central office staff considered research when making decisions about textbook adoptions, priorities for the professional development for schools, and processes for school improvement planning, not their own daily work. These studies use sense-making theory to conclude that that leaders either do or do not use research even though people can make sense of ideas to different degrees.

Given the paucity of such scholarship specifically on central office research use, we turned to the broader literature on central office knowledge use. Central office administrators frequently appear in that literature as misinterpreting and misappropriating ideas that demand significant shifts in their work (Hanaway, 1989; Spillane, 2000). For example, across a series of studies, Honig (2004, 2009) found that even new central office employees already familiar with the new knowledge fell back on traditional central office routines antithetical to the new ideas.

The broader research on knowledge utilization in bureaucratic organizations (e.g., Levin, 2013; Nutley et al. 2003) likewise underscores many reasons why bureaucracies such as school systems tend not to use new knowledge to substantively shift their practice. For instance, *cognitive factors* generally lead individuals to interpret evidence in ways that fit what they already know and can do (Levitt & March, 1988; March, 1994). Decision makers reshape evidence into simpler, familiar, confidence-building forms that lessen their urgency to change (March, 1994; Weick, 1995). Individual and organizational *histories* or *past experiences* similarly limit the use of research and other evidence. Individuals tend to notice ideas that resonate with their relatively recent experiences (Levitt & March, 1988; March, 1994). Even when they consider new ideas, individuals tend to fit those ideas into their prior knowledge, using evidence that reinforces prior understandings and actions and rejecting evidence that conflicts with them or reinterpreting that evidence so it does not conflict.

Performance also curbs knowledge use. Low-performing organizations tend to fall into "failure traps" (March, 1994, 2008), creating the appearance

of using ideas considered legitimate in their fields or industries but not allowing the ideas to penetrate their core work (DiMaggio & Powell, 1983). On the flipside, high-performing individuals and organizations tend not to search for new ideas but instead rely on existing policies and practices in ways that also limit knowledge utilization (March 1994, 2008).

Other reviews and studies begin to suggest a potentially productive way forward. First, given the significant learning typically involved when new ideas become a part of regular professional practice, various researchers recommend, albeit generally, conceptualizing research use as a learning process (Dagenais et al., 2012; Levin, 2013). Studies that characterize knowledge use as interpretation seem consistent with such a learning focus, as does Trujillo's (2013) conclusion that central office leaders who help colleagues use new knowledge "model, make explicit, and nurture values" (p. 553). Accordingly, we hypothesized that viewing research use as a learning process would advance knowledge in this area.

Second, particular forms of outside assistance can support research use and other challenging change processes. Coburn and Stein (2010) present a series of case studies that show so-called research-practice intermediaries working between research and practice communities to facilitate the exchange of knowledge between the two. Intermediary organizations can create opportunities for researchers and practitioners to work together to make sense of research-based ideas and how practitioners may productively adapt them to their settings (Datnow & Park, 2010). These organizations may also translate research into tools to serve as a medium for learning; tools may constrain understanding in ways that limit misinterpretations and also serve as jumping off points for new understandings that may be important to research use and ultimately, better professional practice and outcomes for students (Ikemoto & Honig, 2010).

These hypotheses framed our focus on the following research questions:

Research Question 1: How do central office administrators engage with research when they intend to use it to shift their practice, especially when the research fundamentally challenges the status quo?

Research Question 2: To what extent do they actually shift their practice?

Research Question 3: What conditions support the use of research for significant shifts in practice? In particular, what happens when central office staff have access to outside support that aims to help them learn to use the research to shift their own practice?

Conceptual Framework

To explore these questions, we turned to sociocultural leaning theory for our conceptual framework. This theory elaborates how changes in work practices involve a learning process of moving from novice to more

expert practice (Lave & Wenger, 1991; Tharp & Gallimore, 1991; Wenger, 1998). This process is defined by multiple, particular, observable shifts in practice. Accordingly, the theory moved us beyond viewing research use as an either-or binary to helping us locate practitioners on a trajectory leading to progressively deeper use of research. This theory also identified conditions typically supportive of such shifts, which informed our site selection.

First, we used Grossman, Smagorinsky, and Valencia's (1999) application of ideas from sociocultural learning theory to distinguish degrees to which central office staff might appropriate or integrate research into their daily practice and define our ultimate outcome of interest—fundamental change. Levels of appropriation that fall short of fundamental change include *no appropriation*, cases where practitioners do not shift their work. Practitioners might also *appropriate a label* or change their talk in ways consistent with the new ideas but leave their actual practice unchanged. When practitioners *appropriate surface features*, they occasionally engage in practices reflective of the new ideas, but they do not consistently demonstrate understanding of what the new ideas involve or why to use them.

When practitioners' appropriation of new ideas represents fundamental change, they demonstrate that they understand what those ideas mean and why engaging in them matters to some outcome. During the early phase of fundamental change, called *appropriating conceptual underpinnings*, practitioners' work consistently reflects these understandings and that they are beginning to apply those ideas in new situations. Those who have *achieved mastery* fully engage in practices consistent with the new ideas and regularly demonstrate understanding of what the ideas are and why they are important. They also improvise, creating new extensions of the practice in current and new settings in ways that build new knowledge.

Sociocultural learning theory also focused our data collection and analysis on particular learning assistance relationships that might support learners' progression along the degrees of appropriation (Tharp & Gallimore, 1991; Wenger, 1998). Across a wide range of settings, assistance strategies have such effects when someone continuously:

1. Models the new ideas in practice: Effective modeling involves systematic demonstrations of actions and thinking using metacognitive strategies to help learners understand what the new practices are and why to engage in them in particular ways (A. L. Brown & Campione, 1994; Lave, 1998; Lave & Wenger, 1991). Such demonstrations may be particularly important for helping learners understand fundamentally new ideas (Collins, Brown, & Holum, 2003).
2. Uses tools to engage practitioners with the new ideas. Tools represent new ideas in practical or conceptual forms that guide practitioners' engagement with them in progressively deeper ways (Grossman et al., 1999; Wenger, 1998). Tools define appropriate forms of acting and thinking and also serve as jumping off points for improvising on those ideas in new settings in ways

- important to disrupting longstanding patterns of practice (J. S. Brown & Duguid, 1991).
3. Helps practitioners identify as capable of shifting their practice in particular ways, sometimes called “legitimizing peripheral participation” (Holland, Lachicotte, Skinner, & Cain, 1998; Lave & Wenger, 1991; Wenger, 1998). As learners internalize images of themselves in relation to mastery, they deepen their engagement in progressively more challenging practices.
 4. Provides and facilitates social opportunities that support interpretation of and practice with new ideas. Such support includes space for sensemaking over the relatively long periods of time that significant practice changes often require (J. S. Brown & Duguid, 1991; Lave & Wenger, 1991).
 5. Focuses participation on “joint work” or specific activities that practitioners already value. Helping practitioners connect new ideas to their existing values helps sustain learners’ participation in activities essential to their learning, including their leadership of their own learning (J. S. Brown, Collins, & Duguid, 1989; Rogoff, Baker-Sennett, Lacasa, & Goldsmith, 1995; Smagorinsky, Cook, & Johnson, 2003; Wenger, 1998).
 6. Bridges practitioners to outside resources to enhance learning and buffers them from unproductive influences, such as demands on their time, which take them off task (Cobb & Bowers, 1999; Wenger, 1998).

Methods

We used our conceptual framework to inform the strategic selection of seven study districts in the same state. We selected districts where we were likely to see central office staff engaging meaningfully with research about how their own practice could support teaching and learning improvement and that had help with the process. We considered such districts those that, according to their superintendents or chief academic officers, (a) aimed to reform their central office using research on the role of central offices in teaching and learning improvement as a main resource, (b) expressed that such reform would mean significant changes in the practice of central office staff, and (c) invested in opportunities for central office staff to learn how to integrate the research into their practice. These arrangements included work with coaches from outside organizations, who reported that they understood their role as assisting administrators’ professional learning. These districts also ranged in size. In 2011, District 1 had 50,000 students, followed by District 2 with 19,000. Districts 3 through 7 had between 2,000 and 5,000 students each. These differences promised to help us see patterns particularly visible across contrasting cases. We focused on districts within the same state in an effort to hold state context constant.

Of the seven, we were able to track the experience of six districts consistently over the course of 18 months. Our study period, January 2011 to June 2012, represented a sort of lull in federal and state policy; implementation of

No Child Left Behind had been well underway, Common Core State Standards had not yet been initiated, and the state was only beginning to pilot a major overhaul of its teacher and principal evaluation system. Accordingly, we had reason to expect we would see a focus in the districts on efforts involving the research.

Within those districts, we identified a core sample of 23 central office administrators whose practice we tracked intensively. We selected these staff because they were those most involved with using the research and also received direct coaching from an intermediary organization. In all districts, this core sample included the superintendent, the head of teaching and learning, staff of the teaching and learning unit, and principal supervisors.

Given our conceptual framework's emphasis on demonstrations of practice, we observed 499.25 hours of core sample members' work. These observations included formal meetings of central office staff grappling with research with or without support from their intermediary organization as well as our shadowing of central office staff as they worked with school leaders and coaches from intermediary organizations (Barley, 1990; Patton, 2002). In each observation, study team members took verbatim notes of formal and informal conversations. We also captured low-inference descriptions of practitioners' nonverbal behaviors such as entering and exiting meetings important to understanding participants' engagement with research.

We supplemented our observations with 124 in-depth, semi-structured interviews with core sample members, other central office staff, and 26 school principals. We interviewed core sample members between one and four times and probed on their definitions of research and research use, understanding of the research-based ideas, their rationales for using or not using particular ideas, and their own reports of their practice and influences on their performance. We asked questions to elicit rich descriptions of concrete examples of research use and sought support for such descriptions from other sources, such as documents. To further triangulate the self-reports, we asked other central office staff and principals about their observations of core sample members' practice. We also interviewed 10 coaches from the intermediary organizations between one and three times to probe their perceptions of their and central office staff members' work and conditions they believed mediated central office change.

We collected over 300 documents related to practitioners' research use, including forms of the research they referenced, organizational charts, and discussion protocols and meeting agendas. We paid particular attention to documents used during meetings with intermediary staff since many fit the definition of a learning tool per our conceptual framework.

Members of the research team who collected data in given settings also led the coding of the data from those sites. This strategy helped ensure content validity since the data collectors had contextual knowledge important to interpreting particular data points. Our team analyzed our data collaboratively

using NVIVO8 qualitative data analysis software in several phases. First, we sorted our data into low-inference categories such as “outcomes” of central office change processes, topics of research that central office staff aimed to use (e.g., “superintendent role”), and specific pieces of research we saw central office staff intentionally aim to use. We also coded for broad potential influences on research use, including the role of intermediary organizations.

Second, we went back into our data by code and refined our analysis using higher-inference categories from our conceptual framework. For example, we recoded our outcomes data by degrees of appropriation. We also distinguished the work of intermediary organizations as more or less consistent with the assistance relationship practices.

Team members met frequently to ensure construct validity by reviewing data together and agreeing on rules for coding with and beyond the constructs in our conceptual framework. For example, team members reviewed a transcript of a meeting in which core sample members grappled with research on the role of principal supervisors in instructional improvement. Team members who did not collect the data first offered their interpretation of the data and assigned temporary codes. The data collector then shared their assigned codes, we discussed any consistency or discrepancies and the implications for further code definitions, and we used the refined definitions in subsequent coding.

Third, we created various displays to help us triangulate our data around our research questions. We first arrayed our data from interviews as representations of what central office administrators said they were doing. We then looked at our observations and documents alongside those claims to understand the relationship between administrators’ stated claims about their practice and the practice we actually observed. We eliminated any examples of practice we could support only with interview data and worked iteratively as a team across examples and districts to ensure consistency in how we assigned examples to degrees of appropriation.

We then arrayed our examples of research use by person and type of research used to see if we could identify any shifts over time, which could represent growth. While learning is not necessarily linear, most patterns of how individual administrators engaged with research over time were easy to characterize as reflective of no movement or progressively deepening research use. However, in some cases, a practitioner displayed somewhat high levels of appropriation at one point in time but not consistently, with the higher-level examples appearing like a blip on a radar screen. In these cases, we favored the most recent instance of practice: When the blip appeared in the middle of our data collection followed by lower levels of appropriation, we characterized the practice in the lower-level terms; when the blip appeared at the end of the data collection, we characterized the practice as trending upward. In all, we identified four patterns of how practitioners engaged with research. In our report of findings, we favored

examples that allowed for ease of readability in an article format (e.g., those not requiring the display of lengthy observation transcripts). For patterns with more than five examples, we reported at least two examples.

To identify conditions that mediated research use, we looked for any differences in particular conditions that matched the patterns. We started with conditions highlighted in our background literature review and conceptual framework and continued with variations on those conditions until we detected one that fit our conceptual framework as well as our patterns. These methods do not allow us to claim that those conditions caused the patterns. However, the consistency between the conditions and the patterns and grounding in the extant research supports our hypotheses that such conditions may relate to the patterns of research use.

Findings

We found our core sample members working to use five discrete research-based ideas that called for fundamental shifts in central office practice. Table 1 lists the main source of the research as reported by respondents and our summaries of the practice changes each involved.

Our 23 core sample members each attempted to use between one and four of these ideas, for a total of 53 cases of research use, which we list in Table 2. Those cases reflected four patterns, illustrated in Figures 1 and 2.

In the first two patterns, core sample members did not shift their practice: In Pattern 1, *low stasis*, participants' practice did not reflect the research and remained at the same level throughout the study period; in Pattern 2, *high stasis*, participants' practice from the outset reflected the research, but we did not see change over time. Patterns 3 and 4 represent growth. In Pattern 3, *low growth*, practice did not reach a deep level but was on a growth trajectory. Pattern 4, *high growth*, represents the main outcome of interest in this study related to movement of practice to levels reflecting fundamental change. In this pattern, three central office staff demonstrated movement to conceptual underpinnings across nine cases of research use.

In the next two sections, we illustrate the data that underlie these patterns as they played out in the context of core sample members using two research-based ideas. We report on the principal supervisor role because use of that research involved the highest total number of cases for any one idea. We share data on executive central office leadership as teaching and learning given the significance of those cases to the overall patterns, as discussed in the section on mediating conditions. Within each subsection, we briefly define what using the research to shift practice entailed and describe cases that illustrate each pattern.

Table 1
Research in Use

Research-based Idea	Main Sources	Typical Shift Involved in Using the Research
The principal supervisor as teacher of principals' instructional leadership	Journal articles: Honig (2012), Honig and Rainey (2014) Case study based on journal articles	From a focus on operations and evaluation To executive-level staff dedicated to supporting principals' growth as instructional leaders; findings elaborate specific teaching practices associated with positive results
Instructional rounds or learning walks	Book: City, Elmore, Fiarman, and Tietel (2009)	From limited school visits focused on monitoring compliance or superficial observations leading to piecemeal suggestions for change To intentional, detailed observations of classroom teaching and the systematic use of data from the observations to ground strategies for improving teaching quality
Executive central office leadership as teaching and learning	Report: Honig, Copland, Rainey, Lorton, and Newton (2010) Book: Tichy and Caldwell (2002)	From a focus on external relations and engagement in broad instructional improvement activities such as setting a vision To dedication of own time to districtwide teaching and learning improvement with a hands-on teaching and learning stance
Cycles of inquiry	Tools based on article (Copland, 2003) and book (Schon, 1983)	From unsystematic change leadership and jumping to solutions To engagement with cycle-of-inquiry processes to ground the design and implementation of instructional improvement strategies with an emphasis on using evidence to explore problems
Instructional services redesign	Report: Honig et al. (2010)	From the delivery of professional development services with little attention to strategic coordination across subunits and actual impact To the provision of strategically designed professional development coordinated across the entire central office that is evaluated for concrete teaching and learning improvements strategically designed professional development coordinated across the entire function that is held accountable for concrete teaching and learning improvements

Table 2
Cases

Cases	Research-Based Ideas										
	Principal Supervisor Role		Learning Walks		Executive Leadership as Teaching and Learning		Cycle of Inquiry		Instructional Services Redesign		
	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2	
D1 A	N/A		N/A		Label→Label		N/A		Label→Label		Label→Label
D1 B	N/A		N/A		N/A		N/A		Label→Label		Label→Label
D1 C	N/A		N/A		N/A		N/A		Label→Label		Label→Label
D1 D	SF→SF		SF→SF		N/A		N/A		N/A		N/A
D1 E	Label→Label		SF→SF		N/A		N/A		N/A		N/A
D1 F	CU→CU		CU→CU		N/A		N/A		N/A		N/A
D1 G	CU→CU		CU→CU		N/A		N/A		N/A		N/A
D1 H	Label→Label		Label→Label		N/A		N/A		N/A		N/A
D2 A	N/A		N/A		None→Label		None→Label		None→Label		N/A
D2 B	N/A		N/A		N/A		N/A		None→Label		N/A
D2 C	N/A		N/A		N/A		N/A		None→Label		N/A
D2 D	N/A		N/A		N/A		N/A		None→Label		N/A
D2 E	None→Label		Label→Label		None→Label		None→Label		None→Label		N/A
D2 F	Label→Label		Label→Label		N/A		N/A		None→Label		N/A
D3 A	N/A		SF→SF		N/A		N/A		N/A		N/A
D3 B	Label→SF		None→None		Label→Label		Label→Label		Label→SF		N/A
D4 A	Label→SF		Label→SF		N/A		N/A		Label→SF		N/A
D4 B	None→SF		CU→CU		CU→CU		CU→CU		Label→SF		N/A
D5 A	None→SF		Label→SF		N/A		N/A		None→SF		N/A
D5 B	SF→CU		None→SF		None→Label		None→Label		Label→Label		N/A
D5 C	None→Label		SF→CU		N/A		N/A		Label→SF		N/A
D6 A	Label→CU		Label→CU		Label→CU		Label→CU		Label→Label		N/A
D6 B	None→CU		Label→CU		N/A		N/A		Label→CU		N/A

Note. D number A-F = respondent's district and unique letter identifier; Label = appropriation of a label; SF = appropriation with surface features; CU = appropriation with conceptual underpinnings.

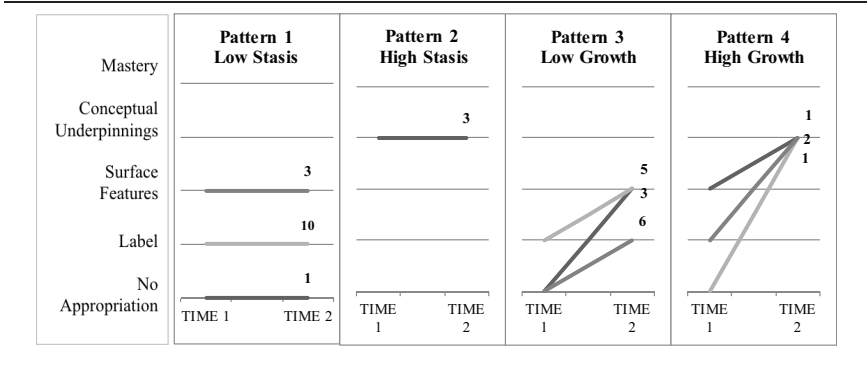


Figure 1. Patterns of appropriation across cases.

	Number of Administrators	Cases of Research Use
Pattern 1	11	17
Pattern 2	3	6
Pattern 3	12	21
Pattern 4	3	9

Figure 2. Numbers of administrators and cases represented in patterns of appropriation.

Research-Based Idea 1: Shifting Principal Supervision From Evaluation and Operations to Teaching Principals to Grow as Instructional Leaders

All districts aimed to use research on the importance of revamping principal supervision (Honig, 2012; Honig & Rainey, 2014). Traditionally, principal supervisors helped principals with operational matters, monitored their compliance with various mandates, and conducted their evaluations. The research called for those staff to shed other responsibilities and dedicate themselves to helping principals grow as instructional leaders—principals who ably support their teachers in improving the quality of their teaching and ultimately learning for each student. Principal supervisors were to take a teaching stance in this process and use specific teaching moves, such as “modeling,” identified in the research as associated with positive results for principals. Accordingly, we analyzed the extent to which principal supervisors dedicated themselves to supporting principals’ growth as instructional leaders and demonstrated the specific teaching practices described in the research.

Most central office administrators who engaged with this research demonstrated no growth and appear in the first two patterns. In Pattern 1, low

stasis, administrators' practice was only superficially consistent with the research, with no growth. Our observations and pressing for examples in interviews were especially important to analyzing these cases because many principal supervisors seemed unaware of how their talk did not reflect their actual behavior.

For example, in interviews over time, one of the principal supervisors in Pattern 1 who remained at the level of label described working closely with principals to teach them to improve their instructional leadership. But during a typical observation of the supervisor's practice, we saw him or her monitoring a principal and two assistant principals—asking the three leaders to provide evidence that they were complying with guidelines for new funding for science instruction.

Later in the year, we observed this principal supervisor working with his or her own coach on what the research referred to as “joint work” moves or teaching moves that a principal supervisor might use to help principals value becoming better instructional leaders. Learners commonly misinterpret this idea as meaning they have a good relationship with a person generally. First, the coach asked the principal supervisor to provide an example of his or her work with one principal that illustrated him or her using joint work moves. The principal supervisor responded,

Where I had to model what I was expecting them to be able to do. . . .
Thinking about [principal] needing to . . . develop an intervention
program for math. And just working through the steps of how to
make that happen this school year.

This principal supervisor then described how he or she mainly directed the principal to adopt the intervention and monitored its implementation rather than engaged in teaching moves to help build the principals' capacity to choose and implement interventions well,

We were visiting those [math and enrichment classes] to see if they
were using the computer-based system. . . . I did an observation and
started drafting out what those look-fors are. I directed her by next
week she needed to have an outline of what those look-fors are. I
was feeling like I was being in teaching mode on the whole idea.

The coach asked, “How? What is the principal learning to do, and what's your role in their learning?” The principal supervisor responded that the look-fors helped him or her monitor implementation and decide how to direct principals to proceed. The coach asked the principal supervisor what he or she was doing to help the principal learn how to lead the reform themselves. The principal supervisor responded with more concerns about monitoring implementation, finally named that he or she was not taking a teaching approach and demonstrated his or her misunderstanding of the research-based idea, joint work,

COACH: Was she [the principal] side-by-side in the thinking of the revisions?

PRINCIPAL SUPERVISOR: I guess I was in the telling, directing mode. . . .

COACH: Did the revision process, did it enhance your joint work relationship?

PRINCIPAL SUPERVISOR: I think so. We have a good relationship.

In the examples of administrators remaining at the level of surface features in Pattern 1, low stasis, administrators occasionally behaved in ways that reflected the research but demonstrated and expressed little understanding of those activities—in this case, what it meant to take a teaching stance with principals and why to do so. For example, one principal supervisor in this pattern expressed a misunderstanding of the research as calling on him or her to help principals, in his or her words, “talk more about what’s happening in our schools . . . how they’re working with their teachers in the classroom.” He or she also conflated all that’s involved in taking a teaching stance with one procedure, asking questions using particular question stems that he or she was working to memorize. As he or she described their job,

To be in schools and to ask the questions, and to ask the “what” questions. . . . I think I . . . know how to run a school, but coaching and working with principals is new to me. I can work with assistant principals. I’ve done that and trained them up. But working with principals that have been sitting in their seats for a few years, I have to be real deliberate on what I’m doing when I go in. So that’s why I appreciate the leadership questions, the assessment questions. “Okay, so how much time are you spending. . . .” It gives me something to work off. And I can use those questions over and over and over. So when they come in [I ask them], “How much time in classrooms? Well, show me. Where are your logs, what are you doing, and how you’re talking.”

Later in the year, this principal supervisor’s coach asked him or her to describe how his or her work reflected the research’s emphasis on partnering with principals to select a limited number of goals for their work together. The specific prompt read, “What is your negotiated focus for your work with this principal?” The supervisor produced many pages of notes from goal-setting meetings, reflecting that he or she knew he or she should establish areas of focus but not how to do so. He or she read from his or her documents, “Quality teaching- planning and preparation, classroom environment and instruction. . . . Professional development—led by [principal] . . . decisions made by assessment data. Developing trust, facilitating collaboration and communication/messaging.”

The coach and a principal supervisor colleague proceeded to point out how what he or she described did not reflect understanding of negotiating a focus,

COLLEAGUE: . . . It’s too many pages.

COACH: . . . Where I struggle in yours is to connect the guiding questions to the focus, the negotiated focus. Maybe because it's too broad.

COLLEAGUE: That's why I'm having a hard time.

COACH: If I'm a principal, I would have a big picture [from the many topics you listed] but it's hard for me to see with these questions and focus on what's the focus for the day.

In Pattern 2, high stasis, two principal supervisors engaged with conceptual underpinnings—with behavior and understanding consistent with the research on principal supervision—but showed no growth. For example, one of these principal supervisors throughout our data collection period frequently declined requests from other central office administrators and principals to get involved with tasks that took his or her time away from direct work with principals focused on their growth as instructional leaders. In one instance, he or she shared emails in which he or she explained to the district security staff why he or she was not going to follow up on the security staff's request to reprimand one of his or her principals for moving a cone in the central office parking lot because his or her job was to focus on that principal's growth as an instructional leader. During our second study year, this principal supervisor reported that when he or she received a request from a central office staff, he or she filtered the request by asking, "What does this have to do with instructional leadership?" Also in the second year, this principal supervisor trained his or her secretary to direct calls about non-instructional issues, such as school lunches, to someone else and restructured his or her one-on-one meetings with principals so the meetings started with instructional not operational issues.

This principal supervisor also demonstrated conceptual understanding by helping his or her principal supervisor colleagues deepen their understanding of the target shifts in their role. In one meeting, the principal supervisors in this district were discussing whether or not they should all use the same form when providing feedback to principals after school visits. During the discussion, this administrator asked such questions as, "Why does it make a difference?" probing the other administrators to articulate how doing so related, if at all, to helping principals grow as instructional leaders. This supervisor stated that providing feedback to principals from a teaching not evaluative stance mattered more to principals' learning than what form they used.

In Pattern 3, low growth, principal supervisors' engagement with the research on principal supervision deepened from little or no appropriation to label or surface features—both reflecting growth but not to levels consistent with fundamental change in their practice. For example, at the beginning of the study period, one principal supervisor vocally rejected the research as not relevant to his or her small district context,

When we studied that [research report]. . . . That was like having a high school teacher watch a 3rd grade lesson. It had very little relevance to us, because they were studying New York City with a million people. . . . All these central office roles. All these instructional leadership people. . . . They have an agent, an instructional leadership agent or whatever. We don't have any of that. So the transfer of what they did to only one person in a district or two people in a district was missing for me.

Six months into our study, this administrator began to appropriate the idea. For example, during one observation, he or she explained to central office colleagues that the principal supervisor role should focus on developing principals' instructional leadership. He or she noted,

Really this work here is about central office and the principals, and it just trickles all the way down to the student and so we're trying to figure out as a group how do we help each other as leaders develop the skills, and the tools and the strategies.

He or she further described,

So that's one example of kind of how I approach all the work I do, which is trying to engage people in thinking about it, and reflecting on it, and contributing to the solution versus this is what we have to do and how, managerially, should we make it happen.

In practice, however, we generally observed this supervisor talking but not working with principals on becoming stronger instructional leaders. When asked to share his or her own description of his or her approach, the supervisor said, "I scheduled weekly meetings with the . . . new elementary principals. . . . I go to their buildings and chat . . . and then if they have something they call me. I try not to bother them."

In Pattern 4, high growth, four principal supervisors deepened their practice from little/no appropriation at the start to conceptual underpinnings. In the most extreme case of growth from no appropriation to conceptual underpinnings, the principal supervisor reported and demonstrated early in our data collection that he or she struggled to observe classrooms him- or herself, let alone in the role of teaching principals how to do so; he or she characterized his or her role as mainly ensuring schools were carrying out district priorities such as standards-based instruction. But a year later, we observed this supervisor actively working alongside principals to help them grow as instructional leaders and explaining in detail what such work entailed and why certain practices reflected that stance. In one instance involving an hour-long conversation with a school principal, this supervisor probed with open-ended questions how the principal differentiated supports for teachers who varied in instructional quality, guiding the principal in how to think about moving from their knowledge of each teacher to ideas

about what supports may build on each teacher's strengths and help them grow. The principal supervisor reported that since engaging with the research, he or she dedicated at least 50% of their time to supporting principals' growth as instructional leaders, compared to their previous interactions with schools that mainly focused on operational issues such as facilities repairs.

This supervisor described a typical visit to a school in terms that reflected what we observed—his or her deep engagement with his or her principals focused on principals' growth as instructional leaders and their understanding of what such engagement entailed and its importance,

We . . . go visit . . . a number of classrooms. We come back and talk through it . . . I'll say "OK, we saw this learning target in this classroom. Let's try to interpret quickly what standards that teacher was teaching to and let's look it up and see if they got it right." Not from a perspective of trying to catch them doing it wrong. This is more for my perspective of making sure that the principals aren't just making assumptions and then come and report to me all these great things that they're concluding based on assumptions. That they take the extra step and look for themselves to make sure. And trying to develop that as being a habitual thing. There are occasions where we'll see the same learning target written [in a classroom] two days in a row. . . . If the whole goal of this was just to write something on the board, we could all quit. . . . The goal is to make as good as we can the end product learning experience for those kids. And that comes through powerful teaching, and knowing our content, and using strategies that engage and promote thinking in kids, and all of that. If this was all about trying to get compliance with writing something on the board, we could call it a day and say hey, we've done that. But it's way bigger than that.

Research-Based Idea 2: Executive Central Office Leadership as Teaching and Learning

All the districts aimed to use research that called for executive-level central office leaders (e.g., superintendents, chief academic officers, chief operating officers) to fundamentally shift their role from management and external relations to leading teaching and learning improvement and doing so from a teaching and learning stance or by engaging in "teaching cycles" (Tichy & Caldwell, 2002). In this research, executive leaders do not simply set and enforce an instructional vision; rather, they engage in hands-on teaching practices with staff, helping staff learn how to support teaching and learning even while learning such leadership themselves. We call this shift leading by teaching and learning.

Two of the superintendents fell into Pattern 1, low stasis, with behavior throughout our data collection period consistent with appropriation at the level of label or talk with no relevant action. In one of these cases, we observed the superintendent run his or her cabinet meetings mainly by

keeping time and prompting staff to provide reports on such operational matters as the reorganization of the budget department, parent complaints, and teacher conduct issues. In his or her end-of-year feedback, school principals described this superintendent as “top-down.”

In another case in this pattern, the superintendent reported that he or she planned to attend regional principals’ meetings across the district to help principals understand the importance of their growing as instructional leaders. Prior to these meetings, the superintendent’s coach encouraged him or her to intentionally take a teaching and learning stance by identifying specific learning goals for the short sessions and particular moves he or she would make to help principals deepen their understanding of instructional leadership and demonstrate that the superintendent would be learning alongside them how to support their success in this regard. We observed all the regional meetings. At each one, the superintendent spent between 20 and 30 minutes speaking without interruption about general changes in the central office that he or she intended to make. The superintendent then took a few questions from the principals about a range of topics and exited.

A member of this superintendent’s cabinet frequently reported in interviews and conversations and even expressed in meetings with his or her own staff that the superintendent repeatedly directed him or her to lead a major reform of his or her department but that he or she did not understand what the reform was or what problem it promised to address,

I don’t feel like I needed [superintendent] to tell me how to fix it. I needed to understand what [superintendent] was trying to fix, and for what purpose. What was [superintendent’s] vision about what was—the what and the why. What was [superintendent’s] intent, . . . purpose, . . . over-arching, “Here’s what I see. Here’s what I see central office looking like when we’re there,” and then I’ll figure out how to get us there

By contrast, throughout our data collection period, the superintendent in Pattern 2 demonstrated that he or she understood his or her role as helping his or her staff learn to lead in ways consistent with the research even while learning the research him- or herself. However, we did not see evidence that this superintendent grew in this regard during our study period. For instance, at the beginning of the study period, the superintendent led a summer retreat with district principals, and the director of teaching and learning focused on narrowing the scope of work of principals to focus on instructional leadership. We observed the superintendent lead the process by prompting principals to discuss in small and large groups how they understood the relationship between the principalship and improved instruction and putting their consensus points onto a master document visible to the group. The superintendent then led the group in organizing their ideas into a theory of action that linked the various aspects of the principalship to improved teaching and

ultimately student learning. Consistent with a teaching and learning approach, the superintendent explained that he or she wanted the principals to co-construct the vision of the principalship to deepen their understanding of how much time they spent on tasks not related to systematic improvements in teaching and learning.

A year later, we observed this superintendent lead another retreat with his or her leadership team in a similar fashion. He or she started by prompting the district leaders to work in small groups to interpret various pieces of student learning data using guiding questions as prompts. He or she then facilitated the groups in coming to agreement on a few main claims about student learning with supporting evidence that would serve as the focus for their instructional improvement work that year. Frequently, the superintendent paused to make metacognitive comments about the importance of the district leaders making meaning of the data for themselves and negotiating a focus for their work together with each other to ensure that their ultimate focus was meaningful to each of them, otherwise they would not be as motivated to lead the work.

In Pattern 3, low growth, two superintendents grew to talk about their role in ways consistent with the research but without corresponding changes in their practice. For example, at the beginning of the data collection period, one superintendent reported that he or she viewed his or her job as focused on administrative matters and that he or she relied on the director of teaching and learning to lead the district's instructional work and support principals and teachers. Subsequently, the superintendent and their leadership team engaged with an intermediary organization to discuss research on the role of the central office. As one central office leader explained, "It was our superintendent's decision to reorganize. The [research] caused awareness. You just have to figure out in your context. How can everybody support student learning."

However, we did not find any evidence that the superintendent shifted his or her role to support student learning, instead still delegating the work to another central office leader, in direct contrast to the superintendent in Pattern 2 who led similar processes themselves. For example, we observed the superintendent open one leadership team meeting by reminding the group about his or her theory of action and sharing his or her experience visiting classrooms to learn more about individual school communities. The superintendent then introduced another central office leader, who ran the rest of the meeting with no participation by the superintendent. At another meeting where the central office staff discussed the district's problem of practice and theory of action, the superintendent arrived late and did not participate in the discussion.

In Pattern 4, high growth, the one superintendent who moved from using the research at the level of label to conceptual underpinnings by the end of our study spent considerable time working with his or her staff on

the improvement of teaching and learning. This superintendent described taking a teaching approach with staff to help them connect their work with instructional improvement in ways similar to the leaders featured in a particular research report,

We had a series of meetings . . . where I gave all of the district office folks opportunities to think about their job, and what they do here, and its impacts on various things. . . . Then I asked them to think about . . . —and we did this over about a six- to eight-month period—think about ways that the things they do could help the district’s teaching and learning, or hinder it. And for many of them it was the first time of ever even thinking about stuff like that. I also set up a visitation schedule where all district office staff went in pairs— . . . the maintenance and operations director, the transportation supervisor, the IT [information technology] supervisor. They spent probably 10 to 12 hours total. They went to each building for two to two and a half hours. They met with the principal to start, and the principal laid out what they were trying to accomplish in the building teaching and learning-wise. They then went out and visited anywhere from four to eight classrooms to watch it in action. They came back and debriefed. . . . And what was amazing is there were people that had been working here for over 20 years that what they might hear from their neighbor is completely different from what they saw in a classroom, because they’d never been in a classroom. They had no idea themselves what actually took place. So it was pretty powerful.

Across multiple settings, we observed how this superintendent taught principals and central office leaders to use a cycle of inquiry process to improve their own practice. This process called on leaders to pinpoint a particular problem related to student learning on which to focus and identify how teachers’ and leaders’ practice contributed to that problem; then staff were to develop a theory of action or logical, integrated action plan to address the problem and continuously assess their underlying assumptions, plans, and progress. A coach described how the superintendent shifted from engaging in the cycle of inquiry work at a surface level to actively using the cycle as a tool to lead the learning of his or her staff and modeling for staff how to revisit and relearn ideas on a deeper level,

Halfway through the first year we were at a meeting and . . . the superintendent . . . said, “You know what, I think we need to re-look at this problem of practice and theory of action because I think we just did an assignment. I think we need to do this better and make it our own.” And they went back, and the focus didn’t change that much, but their approach to it did, and then their strategies began to be more meaningful and a little deeper thought put into them. . . . That’s when they started being a better team. . . . That was when I thought, “Okay, they’re starting to get it now. They’re starting to understand that this has to be their real work.”

Confirming this report, we observed several meetings in which the superintendent led his or her leadership team in slowing down the process of developing a districtwide instructional vision to help staff better understand and learn to lead the work. At one such meeting, the superintendent explained to their team,

Let's not try to establish a common vision right now but talk through what would it look like if we were striving to have a common vision? What would it look like from the central office perspective, the principal's . . . , the superintendent's . . . , if we had a common vision?

The superintendent went on to say that once they had a common understanding, the team would be in a better position to craft a vision that they would actually use to guide their work.

The superintendent described his or her own transition from a relatively passive participant to a leader of teaching and learning improvement, "When I first saw [the ideas about leading as teaching and learning], just those terms got me a little wound-up. I wasn't familiar with them." He or she said that the team became overwhelmed with what the research was asking them to do and that her or she felt "the same way." But, the core issue is how do we spend "the lion's share of our time focused on this work, making sure we're out in classes, and using small situations. It doesn't just happen in one setting. It takes time to establish it."

In sum, central office administrators in our study varied in the extent to which they engaged with particular research-based ideas and demonstrated shifts in their practice and understanding of those ideas. What conditions may explain these patterns?

Conditions Associated With Research Use

Per our conceptual framework, we first analyzed the role of the intermediary coaches in supporting research use and found clear differences: Those who most consistently engaged in the teaching practices highlighted in our conceptual framework at a high level participated in cases of little or no growth in central office administrators research use; those that reflected the teaching practices far less consistently were those working with the central office staff involved in the growth cases. These findings represent the *opposite* of what scholarship on research-practice intermediaries suggested would be the relationship between intermediaries' involvement in high-quality assistance relationships and research use.

We then examined other conditions with a focus on those, such as prior knowledge, that appear in other research. We found those conditions aligned with some but not all the patterns. We then noticed that in the districts with growth, the superintendents heavily engaged in leading the learning of their staff in ways consistent with the features of assistance

relationships from our conceptual framework. Thus, our findings do confirm the importance of assistance relationships but suggest that *who* provides the assistance may matter. Specifically, district leaders may be important main agents in leading the learning in those relationships, even when they are learning the new practices themselves; intermediary coaching of even limited quality may provide important supports when the coaching helps district leaders lead the learning of their own staff. As noted, our methods do not allow us to claim a causal relationship between the role of the superintendent and research use, but the alignment between such findings and their grounding in theory suggests that the superintendents' efforts to lead from a teaching and learning stance matters to research use. We elaborate those findings in the following section.

Intermediary Organizations

Based on extant research, we had hypothesized that intermediary organizations would have important roles to play in the research use processes by engaging in assistance relationships consistent with our conceptual framework. We had selected our study districts based in part on their work with intermediary coaches who reported they viewed their work as assisting with leaders' learning. However, our data do not suggest a clear positive relationship between the coaches' work and the patterns of appropriation.

To elaborate, District 1's coaches provided far more hours of assistance to those central office staff than any other coaches in our sample and in the kinds of authentic settings our conceptual framework highlighted as essential to learning. Specifically, they met with the principal supervisors once or twice a month for professional development sessions, led whole-day sessions several times a year to help principal supervisors practice using the research in authentic settings, coached principal supervisors in pairs on the job, and worked intensively with the superintendent through in-depth conversations, modeling, and feedback. We directly observed 102 hours of these interactions and saw the coaches use the assistance strategies in our conceptual framework frequently and with a high degree of consistency with theory.

For example, we observed one of the coaches convene all the principal supervisors and the chief academic officer at a school for an entire day to learn how to teach principals to observe classrooms as a strategy for improving the quality of classroom teaching. Consistent with joint work moves, the coach began this session by engaging participants in an intensive hour-long discussion about how and why to use an explicit, formal definition of high-quality teaching to anchor the classroom observations. During this discussion, the coach guided the participants through prioritizing particular aspects of the definition to use on that visit and explained the importance of teaching principals to do so in their own work with teachers.

Then, the coach made metacognitive comments that they were going to model for participants how to have an extended conversation with principals about what they are seeing in classrooms. The coach said that often, facilitators simply ask principals to brainstorm what they would look for as evidence of particular teaching standards but leave the suggestions unchecked; by contrast, when facilitators press for an explicit connection between look-fors and standards, learners truly deepen their understanding of what the standards mean. The coach demonstrated how to probe for such connections. First, he or she asked the principal supervisors for one aspect of the classroom they expect to see related to “student engagement.” The conversation then proceeded in the following manner.

PRINCIPAL SUPERVISOR A: Checks of understanding. Thumbs up, thumbs down.

[Note taker clarification: Meaning that one way to check for student engagement is to look for teachers’ use of strategies to check understanding such as asking students to indicate their level of understanding with their thumbs.]

COACH: How do you relate to that to student engagement?

PRINCIPAL SUPERVISOR A: It gives all kids an easy way to say whether they are getting it.

COACH: Can you calibrate with the [instructional framework] tightly?

The principal supervisor explained that such strategies suggest a teacher is seeking student engagement by asking students if she should continue with the next point or spend more time on the previous one. “It prevents them [students] from getting into the lesson and not participating.” The coach then asked other participants to reflect in their own words on how such probing for connections and understanding might help the observer understand the quality of teaching and learning in that setting and support others in the group in stretching their thinking.

In an interview, this coach explained that some central office staff learn well in those whole group settings, but others need more individualized coaching, and that he or she works to differentiate how he or she helps central office staff learn,

There’s different venues to learn different things. So a PD [professional development] session is probably really good for learning some new material. But it’s not going to be enough to help you change your practice. So the embedded coaching is where you could actually help people, where you can model, and actually get them in-the-moment support to try new stuff.

This coach reported that he or she aimed to use all the engagements with central office staff as opportunities to model how to lead from a teaching stance. For example, the coach showed us various e-mails he or she drafted to central office staff before each coaching session outlining what

they would do together and why. The coach explained that such regular, consistent communications help create a “shared narrative” that the coach was a support for their learning and let principal supervisors into their thinking about what they were doing and why.

Given the consistency and frequency with which the coaches from this intermediary organization engaged in the assistance relationship practices highlighted in our conceptual framework, we expected to see deepening research use among the central office staff with whom they worked. Many of those central office administrators attributed their reported improved use of the research to support from the intermediary organization. As one said, “I can see the concrete changes that happen in my regional [principal] meetings as a result of that [coach’s] feedback.”

However, we did not find any cases of growth in this district across four different research-based ideas and eight individuals. We wondered if perhaps despite the coaches’ best efforts, central office administrators did not adequately engage in their coaching in ways likely to yield more positive results. Two of the core sample members did demonstrate limited engagement. For example, one of the principal supervisors occasionally came late to or left early from coaching sessions; this person also rarely participated in discussions, and when he or she did, his or her comments tended to be off topic. Not surprisingly, this person showed no movement in his or her appropriation of two of the research-based ideas. However, neither did the other core sample members who very rarely missed coaching sessions.

Further confounding the association between the intermediary organizations and deepening research use, Districts 3 through 6 engaged with the same intermediary organizations who collaborated on their assistance to districts, yet levels of research use in these districts varied. Additionally, the coaches from these intermediaries tended to engage in teaching practices in our conceptual framework at a far lower level of quality and frequency than the District 1 coaches.

For example, these coaches opened a meeting for teams from all four districts by clarifying the purpose of the session and the learning targets in ways consistent with taking a teaching approach. They explained the rationale for each segment of the meeting and how they designed the segments to help participants realize the learning targets. But the coaches then talked to the group in lecture mode for significant stretches of the meeting. In one segment, a coach posed a question ostensibly to encourage participants’ sensemaking about the use of a particular protocol for understanding teaching quality. The coach solicited two comments, did not respond to those comments, and then talked to the group for approximately 15 minutes with only the other two coaches chiming in, followed by a 7-minute video and about 5 more minutes of instructions from one of the coaches. Only then did the coaches ask the district teams to engage in small group discussion about the materials.

During the small group discussions, many central office administrators did not start the activity. One said they had not paid attention to the instructions. Another commented that they had trouble hearing the video. Two coaches then interrupted the small group discussions to offer further instructions about how the conversation should proceed. The groups we observed generally did not follow the prompts.

These coaches also tended to introduce more ideas and protocols than participants could follow. For instance, one coach opened another meeting by taking over 15 minutes to list multiple meeting goals, including “aligning to research,” “use of tools,” “principals’ instructional leadership,” and “cycle of inquiry.” The coach then posed broad questions not obviously tied to the framing comments and directed meeting participants to discuss the questions in their teams. At that point, one central office staff person with whom we were sitting commented to a colleague, “I lost her. When she asked us to review those four questions, I started to read them and then she interrupted and from then on I just got scrambled.” Another commented, “I’m having a hard time keeping up because the conversation keeps jumping around.” A third said, “I need to feel a sense of closure before we jump into the next topic.”

Individuals’ Prior Knowledge

We then explored conditions that typically appear in research on knowledge utilization as mediating knowledge use. We found no clear association between those conditions and the patterns. For example, the Pattern 2 cases of conceptual underpinnings involved central office administrators who reported prior knowledge of the research. One such administrator’s doctoral program in educational leadership addressed three of the five research-based ideas. Another reported that when he or she was a principal, he or she wanted the kind of principal supervisor described in the research and that such prior experiences deepened his or her understanding of why to engage in his or her role in such ways. Similarly, one administrator who appeared in Pattern 1 as consistently appropriating the research only at the level of label had spent 5 years working in a central office and approximately 10 years as a principal; he or she reported that he or she aspired to promotion in a traditional central office structure and that he or she had little experience leading instructional improvement, let alone engaging in the demanding instructionally focused work practices that several strands of the research demanded.

However, those in Pattern 4 who grew to conceptual underpinnings across one or two of the research-based ideas also did not have prior experience with the strands of research and were midcareer or senior educational administrators who had come up through traditional educational administration pathways that did not emphasize the research’s teaching and learning focus. These staff, both principal supervisors, described their former work as the supervision and evaluation of principals in compliance-oriented terms

and that at the start of their engagement with their intermediary organization, they had only a superficial understanding of high-quality instruction, and how to support it. One said, “Seven years ago, when I saw students working collaboratively together, I thought that was sort of the ‘be all, end all.’ I thought that was really good.” But now “I would say that [research] has really honed my understanding of what it should look like. Not all collaborative work is necessarily effective or appropriate. And that is just one example I can think of.”

District Size

We then compared our two districts that varied the most starkly from each other: District 1 where we saw no cases of growth despite an intermediary organization engaged consistently in our conceptual framework’s teaching practices and District 6 in which all cases appeared in Patterns 3 and 4 demonstrating growth but whose intermediary coaches inconsistently used effective teaching practices. One difference between these districts was size, with District 1 significantly larger than 6, so we explored any data that supported the hypothesis that district size may have mattered to research use.

Our data actually suggested that administrators in smaller districts, where the growth cases occurred, should have had a harder time using the research. In interviews, most staff from the smaller districts criticized the research as having come from studies of much larger districts and that they had difficulty relating the findings to their smaller settings. Staff in the smaller systems struggled to manage the new instructional demands when they did not have other staff to take operational tasks off their plates. By contrast, District 1 was similar in size to districts in the research and had dedicated principal supervisors, for example, as well as many other staff for operational issues.

The intermediary coaches also reported that improving the practice of principal supervisors in particular in the small districts was challenging given the small number of supervisors (one to two per district) available there to learn together in the kinds of social settings highlighted in our conceptual framework. The coaches convened staff from the small districts in a network to support their learning together. However, given basic logistical challenges of convening staff from multiple districts, these meetings were only a fraction of the support available to principal supervisors in District 1.

Internal Leadership as Teaching and Learning

Our comparative analysis by district revealed one condition that corresponded with the patterns of appropriation: the participation of the superintendent in leading his or her staff to use the research and doing so from a teaching and learning approach. These findings reinforce the importance

of assistance relationships per our conceptual framework, but those led by internal leaders, not those from outside organizations.

To elaborate, again with a comparison between Districts 1 and 6, in District 1 where we saw no growth in research use over time despite intermediary coaching highly consistent with our conceptual framework, the superintendent often talked to different audiences about the central office reform process and emphasized the importance of their staff engaging with the research. For instance, this superintendent required that the principal supervisors set aside between one and two meetings monthly to work with coaches to improve their practice in ways consistent with the research. However, the superintendent did not lead the work him- or herself from a teaching and learning stance. We described this superintendent's leadership at some length previously as an example of Pattern 1.

This superintendent also frequently turned leadership of the reform process over to intermediary coaches, including parts of cabinet meetings, and staff often expressed that he or she did not understand the superintendent's reform agenda. As one cabinet member admitted,

So I have had people in other parts of the organization say, what is the central office transformation that [they are] talking about? Is there a big change coming? [Superintendent] just talks about it once in a while and I have no idea what [superintendent] means.

By contrast, by the second half of our data collection, we saw the superintendent of District 6 actively leading the research-based central office change processes from a teaching and learning stance. We describe this superintendent's leadership as an example of Pattern 2 where we recount how the superintendent led his or her executive team through several strategy sessions to reimagine his or her central office as a support for district-wide teaching and learning improvement using a cycle of inquiry approach. This superintendent explained the importance of his or her leading the work him- or herself rather than relying on outside coaches,

We had [coach] out with us, and he ended up doing a lot of the coaching with the principals. That was good. . . . But I got a little bit off track on my own schedule with them, and I didn't want to be just hammering on them with all this coaching all the time. Because . . . I don't think you want to let it go on too long. Because the bottom line is whether it's [name] as the coach or somebody else, they're only here X amount of days per year.

The superintendent went on to explain that a primary lesson he or she had learned from the research was the importance of his or her own hands-on leadership with other leaders in the system to build their capacity to support teaching and learning improvement.

In sum, these findings raise questions about the power of intermediary organizations to drive central office change from the outside in. Instead, superintendents and other executive-level leaders may have important roles to play in leading the learning of their own staff, even when they themselves are still learning the research. Sociocultural learning theory supports the association between their internal teaching role and the growth in their staffs' use of research. Also consistent with theory, the superintendents in the districts with growth cases likely taught by example, providing powerful models of using research themselves, however imperfectly. In so doing, consistent with a joint work approach, they may have demonstrated the value of all staff doing so, even the superintendent.

Discussion

This article describes the outcomes and conditions in six school districts that aimed to use research that fundamentally challenged their central office status quo. We explored the proposition that research use is a learning process that theories of learning could help illuminate. We looked specifically at how central office leaders tried to use research about their own practice to shift their daily work as opposed to using research about school improvement to guide their agendas for schools or other decisions.

We found that some central office leaders are in fact trying to use research on how their own practice may matter to results in schools. Ideas from sociocultural learning theory well describe central office administrators' engagement with research and help define different patterns of research use, including low stasis (practice inconsistent with the research with no change), high stasis (practice consistent with the research but no change), low growth (movement toward deeper use of research but to still low levels), and high growth (movement from practice inconsistent with the research to consistent practice). Others have used sensemaking theory to describe central office administrators' understanding of research as either consistent or inconsistent with a given idea. We illustrate that research use is not so much a binary but a trajectory with at least five milestones from no appropriation to mastery.

Our conceptual framework also helped us push beyond the myriad constraints on research and other knowledge use well chronicled in extant research to explore conditions that might enable it. We found that outside organizations, sometimes called research-practice intermediaries, can engage in teaching practices that support learning, but to limited effect. Assistance relationships are still important supports for research use—when executive-level leaders such as district superintendents lead the learning in such relationships even while they themselves are learning the research. Such leaders' hands-on engagement in the work likely imbues it with value important to sustaining the learning of other staff. These leaders may provide particularly important models of using research beyond what an outside

coach can or what a superintendent could achieve by directing their staff to use the research. Their presence on site likely far exceeded what was possible even for the most engaged intermediary coaches, enabling support for learning throughout administrators' days.

These findings suggest several important directions for future research. First, researchers should significantly deepen the precision and rigor of their studies of research use by using robust theories of learning or other frameworks that help distinguish leaders' growth in their actual practice. Current research mainly focuses on leaders' use of research to make decisions (Coburn, Toure, & Yamashita, 2009; Farley-Ripple, 2012). But leadership is far more than discrete decisions, and leaders use new knowledge to different degrees. Researchers would produce knowledge more relevant to the realities of leadership with better attention to the dynamics of their practice.

To do so requires researchers not to rely interviews as a main data source and engage in extensive, real-time observations. As we demonstrate previously, practitioners' reports in interviews did not always match their practice, and in fact, such disconnects between talk and action are predictable according to sociocultural and other learning theories, especially for novices. Had we relied on interviews, we might have concluded that practitioners used research far more than they were since many had appropriated the research in their talk but not their behavior or understanding. Asking leaders to videotape their work might help researchers capture the many instances when researchers cannot be present. When conducting interviews, researchers should consider probing for examples of practice. Such protocols would not simply ask for practitioners' perspective on research but explore their rationale of why such research matters.

Limits of our study also suggest potentially productive avenues for future research. For one, our study captured 18 months and certain patterns of research use, but would the patterns differ with a longer time horizon? As we note in our methods section, by the end of our data collection period, some core sample members were just beginning to show deepening use of certain ideas. Had we extended our data collection by three months or longer, would we have seen the trajectory continue? With a longer time horizon, researchers may be able to dig deeper into the cases in Pattern 2 in which central office leaders demonstrated conceptual understanding throughout the study period with no growth. Such practitioners may have been headed toward mastery, which requires demonstrations of conceptual understanding over many years. After what period of time do leaders reach mastery with ideas like those explored here? What supports help leaders advance to mastery in particular?

Our study examined practitioners' engagement with five research-based ideas, all of which called for fundamental change in traditional central office administration, but do practitioners engage with different ideas differently? We did not detect any such variations, and accordingly, we reported findings

across the set of five ideas. But variations in the ideas themselves may matter for how practitioners engage with them. For instance, the research on principal supervisors detailed particular practices associated with positive outcomes, whereas the research on instructional rounds described activities involved in classroom observations generally, not specific to how central office staff might engage in them. Sociocultural learning theory suggests that explicit models of practice are important supports for learning (Collins et al., 2003). Future research might explore such distinctions.

Our findings suggested that assistance relationships may be important to research use processes and that superintendents might be especially powerful assistance providers. We offered some interpretations of this outcome based on sociocultural learning theory per our conceptual framework. Other approaches might further illuminate and explain this dynamic. For example, institutional theories suggest that normative pressures from superintendents may be important to research use in central offices by legitimizing the research and its use in ways not possible by an outsider (Coburn & Talbert, 2006).

This study also has important implications for school district leaders and other practitioners. For one, educational research arguably is becoming more relevant to central office practice and may serve as an important resource for central office staff. How might central office leaders make use of such research to help their staff grow their own practice? In the process, leaders may do well to notice that much of the research calls for fundamental departures from central office practice and that their staff and colleagues may need particular kinds of help using it. The levels of appropriation have important practical use as milestones for measuring practice changes. Hiring staff with at least some prior knowledge consistent with the research may enhance such learning.

Two, this research suggests that central office leaders should not rely on even highly capable outside organizations to lead too much of the central office reform process. This study highlights that outside organizations can play important roles in exposing leaders to new research-based ideas but that they do not substitute for central office leaders leading the work themselves even while still learning the new ideas. Participation of such leaders likely communicates that engagement with the research is a valued shared endeavor important to learners' motivation. Such leaders also likely serve as powerful models of the use of research and the learning to do so, also important to others' learning.

Central office leaders might avoid overreliance on external support providers by seeking out those with explicit, field-tested theories of action about how to build the capacity of central office leaders to lead the work themselves. In our experience, many intermediary organizations claim to build central office capacity but lack a strategy for doing so. Perhaps as a result, many of these organizations end up providing various services such as professional development that central office leaders could learn to run

themselves. We encourage central office leaders to ensure they are using outside support to build their own capacity to lead central office improvement from a teaching and learning stance. We also suggest research-practice intermediaries develop and use explicit strategies for helping central office leaders learn to lead the change processes.

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