Principals Developing Teacher Leaders to Learn and Enact Joint Inquiry in Teacher Teams

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Introduction

Working as a public school principal is arguably the most demanding job in the field of education. Each day is unique and an unpredictable "stream of brief, fragmented, problem-oriented interactions, most of which are initiated by others" (Hallinger & Murphy, 2012, p. 10). In the face of managing the unpredictability of the work, the public school principal also struggles to make sense of how to mitigate the predictable countervailing forces, such as standards-based reform, accountability, teacher shortages and turnover. Thus public school principals are increasingly finding the stress of their jobs to be unmanageable and unsustainable (Murphy, 2006; Goldring & Taie, 2014; Edwards et al., 2018).

One clear way that principals remain resilient in the face such stressors is to distribute leadership responsibilities strategically and marshal available resources to achieve and sustain improvements within their school communities (Murphy, 2005; Reeves, 2008). By combining elements of transformational and instructional leadership, principals who drive demonstrable improvements in schools typically evidence a deep grasp of systemic problems affecting their schools, and implement clearly articulated, organizationally shared educational values through complex, context-sensitive, "layered" strategies that are progressively embedded in the school's work, culture, and achievements (Day, Gu, & Sammons, 2017). To pull these efforts off, principals cannot work in isolation. Conducting inquiries into systemic problems and carrying out shared norms and strategies requires the principal to leverage the distribution of leadership (Spillane, 2012). That is, transformational and instructional leadership in the Common Core era requires the principal to build a deep bench of highly capable teacher leaders (Curtis, 2013; Harris et al., 2013).

One of the more prominent models for reorganizing the school as a space where *everyone goes to school* is the work of Drago-Severson (Drago-Severson, 2009). In this model, schools are redefined as *learning centers*, or places where "all adults and children are supported to continue growing, learning, developing, and thriving" (Drago Severson, 2007, p. 71). Schools configured as learning centers require principals to have a strong commitment to developing themselves and fostering adult learning and leading

with their respective staff members. This aligns with Blasé & Blasé's (2001) findings that when principals support teacher learning and leading, teachers thrive, and by extension, students also thrive in such circumstances.

Developing teacher leaders to carry out such work requires the principal to create a culture of organizational learning (Hallinger, 2010) to deepen and distribute knowledge and expertise around instructional leadership capacity. Further, a consensus is emerging that realizing the instructional ambitions envisioned by the Common Core State Standards requires levels of rigor and interdependent action in teacher teams that exceed current norms for teacher collaboration and professional community (Fullen & Quinn, 2016; Forman, Stosich & Bocala, 2017). The purpose of this paper is to understand the roles principals play in building the capacity of teacher leaders to organize teacher teams for "joint inquiry," or the enactment of tightly coupled and highly interdependent modes of teacher collaboration. We ask in particular:

- What are the granular moves that principals make to cultivate advanced instructional leadership capacity for joint inquiry in a cadre of teacher leaders?
- What structures, routines, and tools do principals generate in collaboration with teacher leaders to sustain the will and capacity of teacher leaders to motivate teachers toward more ambitious instructional goals and learning in team settings?

Theoretical Framework

Two broad strands of literature inform our research: Theories of situated learning addressing how school leaders use structures, routines, and tools to facilitate and support the distribution of leadership and collaborative arrangements, and literature addressing the cultivation of adult leadership learning in collaborative developmental settings.

Structures, Routines, and Tools

A long tradition of scholarship has focused on the power of structures, routines, and tools in facilitating and constraining human behavior and sense-making (Ranson et al., 1980; Stevenson, 1990). Structures have been characterized in terms of enduring and persistent systems or integrations of roles,

craft knowledge, values, norms, expectations, and routines that shape human identity, instantiate shared meanings, and support as well as constrain professional practice (Westley, 1990; Greeno et al., 1996; Cosner, 2012). Ranson, Hinings & Greenwood (1980) have pointed out that structures incorporate "normative expectations and prescriptions for competent operation and satisfactory performance" in ways that guide the acquisition of expert practice by novice learners (also Moore, 2013). For this reason, most discussions of the origins of communities of practice emphasize the key role of structures in coordinating the diverse elements necessary to motivate novice learners to invest their attention in collaborative learning processes (Wenger, 1998; Ball et al., 2009; Spillane & Coldren, 2011).

Feldman and Pentland (2003) defined organizational routines as "…a repetitive, recognizable pattern of interdependent actions, involving multiple actors" (p. 96). Challenging a dominant view of routines as agents only of stability and control, they have emphasized the improvisational, emergent, and generative nature of routines. That is, routines are produced by collective effort within the subjective space between the "ostensive" element – the abstract and often tacit guidelines for a routine – and the "performative" element – that is, the specific ways that groups of people enact those perceived guidelines. Research by Spillane and associates, Coburn, and Horn and Little all confirm the view that professional routines are generative of both coherency and innovation within schools, and that leadership is crucial to whether routines enable or constrain the capacity of teachers to collectively improve their practice and acquire leadership skills (Spillane, 2006; Coburn & Russell, 2008; Horn & Little, 2010).

According to Spillane (2006), "Tools are externalized representations of ideas that are used by people in their practice…These tools mediate how people practice, shaping interactions among leaders and followers in particular ways." From the perspectives of situated learning and cognition, tools frame interactions among collaborating practitioners, and are pivotal in accounting for how a community of practice enculturates novice learners at the levels of both competency and identity (Wertsch, 1991, 1998; Collins, 2006). Moreover, the design and re-design of tools is a critical constitutive activity of any vital community of practice and its leadership, creating affordances for the elevation of performance while improving the "aptness" of tools for accelerating skill development and enlivening the subjective

experience and identification of members (Csikszentmihalyi, 1990; Halverson 2003; Spillane & Coldren, 2011). Tools are embedded within routines in ways that bring explicit and tacit information about the purpose of routines and their host structures to group attention, creating both affordances and constraints on collective action (Wertsch, 1991; Moore, 2013). A particularly powerful function of tools-in-use is their capacity to make practice and competencies "public," that is, accessible to evaluation by expert practitioners within a community of practice (Lave & Wenger, 1991; Halverson, 2003). Moreover, tools-in-use provide a rich focal point for observing how novice learners and expert facilitators collaborate to make sense of those learning processes best suited to sustain a generative "zone of proximal development" over time (Greenfield, 1984; Brown et al., 1989; Little & Curry, 2009).

Leadership for Adult Learning

By synthesizing intersections across professional development (Donaldson, 2008; Byrne-Jiménez & Orr, 2007; Peterson, 2002), adult development theory (Kegan & Lahey, 2009; Wagner et al., 2006), adult learning (Cranton, 1996; Mezirow, 2000), organizational development (Fullan, 2008), and leadership practices (Leithwood, Seashore-Louis, Anderson & Wahlstrom, 2004), Drago-Severson (2009) posits a learning-oriented and developmentally focused model of cultivating and harnessing school leadership. Drawing extensively from Constructive-Developmental Theory (Kegan & Lahey, 2009), Drago-Severson is particularly interested in understanding how educators interpret the personal implications of their work experiences in ways that ascend in metacognitive and emotional complexity. While the ways in which teachers and leaders individually construe meaning have important implications for instructional improvement, the structures in which adults make meaning of their work and learning – their "holding environments" - are equally important. This has led Drago-Severson (2009) to identify four "pillars of practice" that school leaders enact to support and develop adult learning and leadership growth: a) establishing teams; b) providing adults with leadership opportunities; c) engaging in collegial inquiry; and d) mentoring interactions. Within each of these pillars or structures, routines and tools such as protocols support leadership actions involving inquiry, resource provision, data discussions, and the rotation of leadership roles. As Drago-Severson (2009) reminds us, building and cultivating teams and

providing leadership opportunities to teachers are "intimately connected because adults assume leadership roles while working with teammates" (p. 108). For this reason we employ the four pillar practices as an analytic spine for organizing the specific leadership moves employed by the 12 principals in this study, with particular attention to their support for *collegial inquiry*.

Another line of scholarship that influences this paper is Stosich's (2016) conception of *joint inquiry.* Stosich's scholarship extends Little's (1990) conception of *joint work* by combining elements of collective action and collegial interactions linked to improving instructional practices. In her exploration of teachers collaborating to make sense of the Common Core Standards, Stosich describes how some teachers were engaged in deeper levels of inquiry into systemic school problems. In particular these teachers were "working with colleagues to investigate their instruction and students' work and determine the changes they would need to make to support students in meeting standards" (Stosich, 2016, p. 16). A key finding involved how processes of challenging and changing instructional practices required shifts in several "mindsets" – what Dweck has identified as robust but malleable working theories that educators maintain about themselves, their practice, and students, parents, and other educators (Dweck, 2006; Earl & Timperley, 2009; Gallimore et al. 2009). Teachers in Stosich's study were more likely to shift their mindsets when their *collaborative work* "…was focused on designing, adapting, and improving specific instructional plans, curricular resources, and students' work rather than more superficial discussions of practice" (2016, p. 1725). That is, mindset shifts required teachers to be fully engaged in the work, and in some cases, to see students' progress in the revised materials, to gain confidence in their own development and with broader school reform initiatives. As teachers become more surefooted in making ongoing changes to their instructional practices, the benefits to student achievement become more pronounced (Timperley, 2011, 2015).

Methods

Sample Development and Participants

The 12 participants in this study are graduates of the pre-service phase of a university-based principal preparation program and currently working in a large urban public school system in the

American Midwest. Participants had completed course work and were preparing "capstone" (i.e. summative paper) projects as part of the in-service phase of their training, including receiving regular leadership coaching at and outside their assigned schools. We used a purposive sampling strategy to identify a group of principals with high levels of competency in developing teacher leaders in team settings, along with clear evidence of strong instructional leadership and success in improving student academic outcomes. Thus we first asked the program's six school leadership coaches to nominate principals with exceptional competency levels in the area of team development from among their own coachees. This generated a starting nominee list of 20 principals. Second, we then triangulated this coach-derived list with two other evidence sources: a) annual district school climate survey data, provided by teachers, bearing on the principal's quality of leadership and teachers' collaborative culture; and b) aggregate student academic achievement data from academic year 2016. Scores were assigned to all three evidence sources to determine a list of 12 principals with evidence of excellence in all three areas. The top 12 nominees were evenly split among elementary and secondary principals and gender. Although some schools are designated as *semi-selectiv*e or *selective enrollmen*t by the district, no school had fewer than 60% low-income or 70% students of color in SY 2016. Table 1 provides an overview of characteristics of the 12 principals and schools (all principal and school names are pseudonyms).

Interviews

We conducted semi-structured interviews (digitally recorded and transcribed) with each participant in the summer and fall of 2016. Interviews ranged from 70 minutes to 120 minutes yielding approximately 18 hours of interview material. Questions focused on the sequence of actions each principal took to build teacher leadership and team capacity, including how they created formal entry plans, diagnosed the leadership and instructional capacity of the staff, assessed the distribution of leadership, made sense of their diagnostics, prioritized the most pressing school issues, began to monitor and evolve initial improvement work, and what they needed to change about themselves to become more effective leaders.

Documents

An important secondary data source were final thesis projects, available for all 12 principals. These capstone projects are case studies documenting how the principal was able to lead change in their

Table 1. Demographic Information Pertaining to the 12 Study Principals and Schools

Name	Gender	Race/Ethnicity	School Level	School Type	Experience as Principal
Allen Verratti	M	White	K-8	Selective Enrollment	4 years
Meera Mehta	F	Asian	HS	Neighborhood	4 years
Peter Dade	M	White	HS	Neighborhood	4 years
Sean Chambers	M	White	HS	Semi-selective	3 years
Ebony White	F	Black	K-8	Neighborhood	4 years
Caitlyn Dennis	F	White	HS	Semi-selective	1 year
Antonia Gomes	F	White	K-8	Neighborhood	2 years
Melvin Hightower	M	Black	K-8	Neighborhood	6 years
Elizabeth Lancaster	F	White	HS	Selective Enrollment	2 years
Alonzo Jackson	M	Black	K-8	Neighborhood	2 years
Maria Suárez	F	Latina	K-8	Neighborhood	5 years
Sylvia Ramos	F	Latina	HS	Semi-Selective	7 years

respective schools. Although theses understandably vary in content, most theses range between 150-200 pages in length. We analyzed elements of principal leadership from all 12 theses. Additional documents we analyzed include: planning documents, developmental rubrics, protocols, and meeting agendas. Documents served as validity checks to confirm or disconfirm interview data and provided alternative perspectives to data. Moreover, the data also provided opportunities for us to better situate our data within our theoretical frameworks (professional learning, leadership for adult learning, as well as structures, routines, and tools) and strengthen the triangulation of our data.

Data Analysis

We used three broad strategies for analyzing our data. Our first strategy was using the theoretical frameworks of Drago-Severson (2009), and Stosich (2016) to better understand how principals were making sense of how to lead adult learning for ambitious instruction in a large urban school district. We first established 1st order concepts (Gioa, Corley, & Hamilton, 2013) by summarizing the interviews in accordance to our interview questions. We then transferred our interview summaries (Maxwell, 1996) to templates that were guided by our research questions. Once we extracted the data from our summaries to answer our research questions, we explored how the data coalesced around "families" of leadership moves across all 12 interviewees. Our first sweep yielded twelve 1st order concepts. After we came to agreement on 1st order concepts, we then used the Drago-Severson (2009) 4 pillars frame to examine whether there was congruence or divergence between 1st order concepts and the Drago-Severson and Stosich categories. School profiles also were developed to capture all demographic information associated with the school, its leader and the school context. These profiles helped remind us of a range of contextual factors that potentially could constrain principals' leadership options. Thirdly, we built matrices (Miles & Huberman, 1994) in Google Sheets to assist with making connections and drawing conclusions across our data set.

Issues of validity in our analyses were addressed in three ways. First, if one researcher conducted the interview with a participant, and then wrote up his respective narrative summary associated with the interview, the other researcher would analyze the written transcript of the same interview and also produce a narrative summary. We would then engage in the process of meaning making to discuss the emerging themes in each interview and the extent to which they were relevant in addressing our research questions. Secondly, we employed member checking for the interview transcripts and, with the permission of the students, triangulated the interviews with the students' doctoral theses ("capstones") in order to articulate how they were building capacity in teacher leaders toward ambitious instruction. Thirdly, we summarized our initial analytic findings and presented them to our interviewees for further feedback. Although our findings will emphasize the powerful practices that harnessed the potential of

teacher leadership, we will also explore the tensions, missteps, and constitutive problems of practice our leaders faced (see Tables 2 & 3). A limitation of this study is the lack of alternative perspectives. Teacher voice is absent from this study and would further enrich the illustrations of how novice principals are building capacity in teacher leaders for ambitious instruction. A second phase of this study is planned to interview members of the instructional leadership team who have been closely working with the principals in this study to advance ambitious instructional improvements.

Findings

Drago-Severson (2008) has characterized collegial inquiry as "…a shared dialogue directed toward helping adults become more aware of their thinking, perspectives, and assumptions, and those of their colleagues" (p. 62). This lens on shared professional dialogue does not limit its transformative potential to large team settings, nor does it confine the occasions for discourse to the improvement of instructional interactions with students. Given our principals' intense engagement with the Common Core State Standards, however, these leaders focused their primary attention on re-culturing their schools toward genuinely developmental aims within instructional improvement teams. In particular, understandings of collegial inquiry were strongly filtered through the structural aim of shifting the interrogation of instruction within teams from "loosely coupled" patterns of sharing and cooperation to more "tightly coupled" arrangements of joint inquiry and collective experimentation (Little, 1999; Timperley, 2011; Stosich, 2016; Hassrick et al., 2017). Two thrusts of this work in the context of instructional teaming were prominent – first, the disruption of mindsets and assumptions likely to impede teacher commitment to highly collaborative inquiry; and second, the enactment of cycles of disciplined inquiry into instructional design that required collective investigation of teachers' practice, and encouraged teachers to think deeply about their grounds for instructional choices.

Surfacing, interrogating, disrupting, and reconstructing limiting mindsets.

Table 2 provides an overview of principal strategies to support the critical discussion of limiting mindsets and assumptions with teachers and teacher leaders in team settings. Both through their professional experiences and their doctoral training, the 12 principals in this study were well grounded in

Table 2. Principal Leadership Practices, Leadership Mis-Steps, and Dilemmas of Practice Associated with Collegial Inquiry - Interrogating Mindsets & Assumptions

Successful or Promising Practices	Notable Mis-Steps; Leader Edges of Growth	Constitutive Dilemmas and Challenges of Practice
1. Actions and Approaches During Entry/Diagnostic Phase: * Integrate comparison schools and comparative frames of reference into data analyses of student learning and school performance data that raise questions like: > Why are similar schools realizing significantly better student learning? > Why are some demographic sub-groups of students not thriving in our school? > Why are the same students realizing better outcomes in some settings than in others? * Interview teachers and other staff members comprehensively with questions that invite teachers to frankly express their views regarding students, parents, the wider community, and other teachers. * Utilize existing teacher, student, and parent survey data to identify basic fears and tensions that may contribute to negative assumptions and attitudes across the adult community. * Identify curricular structures (e.g. punative grading practices; differential tracking systems) that divide faculty and students within factions tied to trait-based ability concepts. **2. Leadership Actions School-Wide** * In the principal's office and other public settings, post images and data summaries that reinforce the school's common vision for ambitious student development and academic success * Involve entire faculty in classroom learning walks in order to establish the wide variations in instructional quality and student engagement. * The Book Club as a vehicle for introducing powerful texts into faculty-wide discussion * As principal, engage students and parents visibly and directly to model respectful and developmentally positive attitudes toward the learning potential of students and the commitment of the school to student success. * Utilize a school-wide student behavior and well-being tracking system to identify students needing intervention and support, while encouraging teachers to log positive interactions with students routinely. **3. Leadership Actions in Teaming Contexts:** * ***To counter deficit mindsets***: Identify and utilize powerful readings to establish a common vocabulary/language around deficit mindsets and other non-developmental frames of thinking. * ***To counter "the culture of nice:"*** train teachers in routines of collegial criticism, and rotate facilitator and referee roles in reviews of teacher work products * ***To counter a "culture of complaisancy:"*** Link assessment data to classroom observations to establish differential outcomes for students across sub-groups (e.g., gender; race; curricular strands) * ***To counter a "culture of compliance:"*** Admins and teacher leaders are ready to "go meta" in team settings when teachers are only going through the motions or mindsets, pervasive attitudes, or dysfunctional assumptions obstruct group inquiry into instructional improvement. * Utilize a succint, student-focused school improvement logic model to engage teachers in conversations linking teacher and organizational capacity to instructional quality and student outcomes.	* **Allowing external compliance pressures to degrade one's public stance from that of "thinker" to "doer":"** In the complex accountability culture of the larger district, several principals admitted that meeting external requirements to post better test scores or just "get things done" diverted teacher teams toward "cycles of doing" and less so toward developing capacities for questioning traditional ways of doing things. * **"Backing off" or delaying the naming and confronting of non-developmental mindsets:** Several principals admitted to moments when fatique or concerns over the fragility of early gains in trust with teachers caused them to ignore or deflect the expression of negative attitudes toward students and families that would later pose impediments to full commitment to more rigorous standards of professional learning. * **Sustaining an "authoratative stance" at the price of "messy" teacher discourse.** Several principals saw the need to take a firm stance on adult behaviors or expressions of low expectations for students, as well as resistance to sharing practices in a collaborative setting. They also gave in to impulses to intervene preemptively in contentious discussions. As a result teachers learned to echo the "party line" publicly, but did not learn collectively to integrate disagreements into further, evidence-based cycles of inquiry.	* **Tension: How to sustain a "learner's stance" as a school leader when a large number of adult colleagues would prefer you simply "make the decision?"** While much is made of the desire of teachers for influence over decisions, principals also reported feeling pressure from colleagues to preempt difficult conversations around race, class, and inequity in favor of a policy pronouncement. Principals sought ways to develop these difficult conversations to new levels of collective insight as active thought partners. * **How to design structures, routines, tools & protocols that invite collective, evidence-based inquiry into problemmatic mindsets, attitudes and assumptions?** As a group these principals recognized that the design of collaborative processes and tools not only scaffolded inquiry, but they implicitly shaped and channeled how participants thought and behaved in sometimes charged and challenging exchanges with colleagues. Principals struggled to discern how to design and situate processes like cycles of inquiry, for example, that supported teachers in confronting uncomfortable inequities in instructional quality and grading systems.

the theoretical literature around deficit mindsets. From the first semester their doctoral courses explored how such mindsets reproduce educational inequity and hobble instructional improvement (Bonilla-Silva, 2017). Nonetheless most expressed at least occasional overwhelm at the rootedness and resistance of non-developmental mindsets, particularly in the entry phase of leading a high needs school. A short list of some of the most problematic attitude frames mentioned in our interviews and strongly implicating views of race and class included:

- Negative perceptions of student intellectual capacity for meeting Common Core State Standards, couched as a reluctance to challenge students in ways that might embarrass or discourage them;
- Negative perceptions of students' capacity for self-regulation and cooperation, attributed externally to community conditions, deficits in family structure and child-rearing, or even student moral character;
- Negative perceptions of student academic motivation, reinforcing limiting norms of *reciprocity* and *fairness* in considering how far teachers should extend themselves in engaging and motivating students, as well as limiting practices like punitive grading and assessment routines;
- A wide range of negative perceptions of the motives, capacity, and professional potential of teacher colleagues, often reflecting long-standing racial and class discord within the professional community and wider school system, and inhibiting the development of relational trust among all adults associated with the school (Bryk & Schneider, 2004; Tschannon-Moran, 2014).

In addition, the principals identified three tacit but constraining mindsets that reinforced norms of privacy, egalitarianism, and autonomy among teachers (Stosich, 2016; Hassrick et al., 2017). These included the view that teaching is more art than practice, and that instruction, if subject to improvement at all, is akin to the private creativity of the artist (Sykes, 1999). This was often closely aligned to egalitarian norms around teaching expertise which hold that knowledge of teaching is idiosyncratic and personal, and thus not generalizable or transferable within a community of practice. This norm helped anchor what one principal labeled "the culture of nice," in which teachers resist or deflect the provision of direct critical feedback to colleagues as both uncomfortable and unfair, and resist receiving such feedback to their own practice (Forman et al., 2017).

Finally, principals and teacher leaders committed to cultivating thoughtful practice among teachers had to contend with deeply engrained tendencies toward *compliance* in understandings of team work and team purposes. For some teachers, of course, this represented a resigned or cynical willingness to "go through the motions" of planning and collaboration. But even the most committed teachers were

prone to see teams as a vehicle for "getting things done" rather than investigation, diagnosis, and data collection, processes which can take uncomfortable lengths of time to learn and enact. The same identity as a "great doer" could hamper the principal as a developer of reflective teams and strategic team leaders. As one elementary principal mused in her interview: "Managing people is hard and I think most of us that come into leadership were pegged or chose it because we could handle tasks, we do tasks well. Tasks ain't got nothing to do with this work….I knew how to do stuff. That stuff is not the job. People think that it is. It's not the job, it's the inner work…."

As Table 2 indicates, the principals in this study deployed and coordinated a range of assets and strategies to surface and expose deficit mindsets and privatized norms of instruction to critical reflection by teachers. At the entry and first diagnostic phase, for example, new principals assembled a range of data bearing on mindsets, assumptions, and the self-described dilemmas facing teachers in the classroom. They gathered a wide range of leading and lagging trend data disaggregated by markers of gender, race, and ascribed differences in student academic status. And they initiated conversations with their assistant principals and interested teacher leaders about the meaning of achievement, disciplinary, attendance and other key indicators of student engagement. Further, they integrated teacher and student survey data with comprehensive interviews with teachers and staff to begin to form a portrait of teacher mindsets and levels of morale against variations in student outcomes. Wherever possible, (and the host district in the study was rich in options for comparing across schools) they identified schools with similar demographic profiles and better performance on key metrics. The point was to assemble a comparative and multi-vocal data portrait with the power to surface patterns of learning inequity and raise questions about the current instructional culture and practices in the school.

Principals in this sample also took several steps at a school-wide level to assert a positive and optimistic vision for student success, cultivate norms of mutual accountability between teachers, students and their parents, and raise the commitment of teachers to improving teaching practice. From the opening day, principals organized their time to engage students and parents visibly and directly in order to model respectful and developmentally positive attitudes toward the learning potential of students. They exhibited

logic models and data summaries at strategic locations around the school that accentuated differences across grade levels in student achievement. At least half of our principals also utilized their doctoral program's core logic model – the LOIS model[1] – to back-map faculty discussions of the instructional ("I") and organizational ("O") factors in play that might account for differential student outcomes. LOIS was particularly valuable for helping principals re-direct teachers' early external attributions of school challenges (point to factors like family and community) toward the question of what teachers collectively should "own" about student learning. As one elementary principal expressed it:

> *Like getting them to learn that logic model is the first humongous milestone. Like you can show that to anybody, on paper, right away and people like, yeah totally got it. But until you've actually lived it and done something that goes through that logic model, you will not understand what it really takes and what it really involves…recognizing that within that you need to be doing things like unpacking data, doing peer observations, student work protocols, like all the those best practice pieces….*

Or as a principal of a particularly high needs high school described its use:

> *Yeah so everything is filtered through this, so like the initial conversations were really about mindsets, right? So like blaming families and blaming teachers about student outcome…Back mapping it back to why this is a direct impact to this, this and this…Then it became a tool to actually look at the root causes of data, like X-Percentage of our African-American boys get suspended compared to these percentages and these other subcategories. What is that a direct result of here, here, here, here? So we're looking at root causes using this model…But really this model is very helpful in challenging viewpoints….*

The development or re-tooling of school-wide data reporting systems could also contribute to bolstering teachers' sense of agency in areas like discipline and daily attendance, while elevating teachers' awareness of positive data trends. In some cases data systems helped stabilize school-wide conditions in ways that demonstrated that principals were listening to teachers' professional concerns. One elementary principal utilized a school-wide student behavior tracking system, for example, to identify students needing interventions and support within the MTSS framework, while also encouraging teachers to log student progress linked to interventions in which they were collaborating with colleagues

[1] The acronym LOIS ("Leadership>>Organizational Capacity>>Instruction>>Student Outcomes") represents the primary path of influence of school leadership on ambitious instructional improvement, namely, through the enhancement of organizational capacity at several levels, including a culture and systems for professional learning and collaboration (Cosner, Tozer & Zavitkovsky, 2016).

like SPED teachers and social workers. As she described it, "I have never been in a context that struggled so much with behavior… close the door and hope to get through the day."

> *[We] quickly purchased Student Logger, which…was a way for teachers to log everything that was happening that I could then link directly to Verify, which then could link to student consequences, was a big deal for them right? Like what is happening to students? Or, where am I putting all this information of the crap that's happening to me every day? Like this kid is telling me to F off for the third time this week, like where am I putting it? And so rolling that out really quickly was important.*

It was in instructional and student support team settings, however, that the greatest leverage on teacher mindsets proved possible. Starting with the ILT and then radiating out to the departments, course and grade levels, team settings allowed principals to engage teacher leaders around powerful readings that could introduce a new vocabulary for naming inequities, and support and regulate uncomfortable conversations about race, class, privilege, and teaching practice. Combined with on-going discussion of diagnostic data, involvement of all teachers in classroom learning walks supported by an equity-focused protocol was also powerful in alerting teachers to negative or ineffectual patterns of student-teacher engagement. This also helped teacher leaders to connect the concepts of effective and equitable instruction to a deepening data record of equitable teaching practice across the grade levels. Awareness of the expression of problematic mindsets and assumptions in daily teaching practices became more pressing as principals introduced ambitious protocols for instructional analysis into the same team settings.

Enabling and authorizing teacher leadership of team-based joint inquiry.

Engaging teacher leaders around the transformation of non-developmental mindsets had valuable direct impacts on teacher-student relationships and school climate and culture. For the 12 principals in this study, however, the broader significance of shifting mindsets lay in motivating and enabling teachers to lead and coordinate several categories of inquiry targeted to the instructional core (Forman et al., 2017). For 11 of 12 principals in the study, instructional leadership teams (ILTs) and similar senior leadership teams were the primary training ground for teacher leaders to learn in areas such as the basic structures and relational dynamics of team process, a common methodology for improvement-focused inquiry cycling, and a set of specific analytic frames for linking the analysis of curricular rigor with the

design of teaching strategies.[2] For this reason, from early in the entry and diagnostic phase, these 11 principals prioritized identifying formal and informal teacher leaders across the school, interviewing those teachers to discern their levels of instructional and teaming expertise, and determining the functionality of current team structures. While some schools were certainly more advanced in team coherency, the principals were unanimous in identifying significant gaps between the instructional expertise of existing cadres of teacher leaders and the levels of expertise implicated in Common Core instruction.

Table 3 provides a granular overview of a range of leadership strategies deployed by our principals to train teacher leaders in the work of joint instructional inquiry, and by extension, build teacher capacity. Here we highlight four practice moves of principals with their teacher leaders in ILTs that seemed to yield dividends in terms of the capacity of teacher leaders (TLs) to induct teachers into ambitious instructional inquiry. First, principals were conscious of the power of a common vocabulary and language for inquiry that would sharpen teacher understandings of ambitious instruction, and help teacher leaders reflect and communicate more efficiently among themselves as a cadre. Most principals drew directly on their doctoral classes to identify readings that introduced and clarified the terminology of the Common Core, instructional analysis, and teacher leadership. “We read 3 or 4 good articles that are specifically aimed at teacher leaders where it's sort of like you're in a formal position, but you don't really have authority over your colleagues.” And they introduced terminology related to team management, logic modeling, and continuous improvement cycles that TLs were expected to migrate into their local teams and report back on their progress. In time, ILTs generated distinctive names for team inquiry protocols that reflected their growing and shared instructional expertise and fluency, and helped consolidate key understandings around ambitious instruction in the minds of teachers. One high school principal recounted how early diagnostic analyses around department and grade level meetings revealed a telling lack of conversation linking teaching choices to the elevation of rigor in student work assignments.

[2] The 12th principal also maintained an ILT and tasked it with whole-school improvement assignments. But he focused his primary developmental work as an instructional leader on grade cluster teams (e.g., teachers from grades 3-4) that were organized intensively around data-informed instructional analysis. This school had the smallest enrollment in the sample.

Table 3. Principal Leadership Practices, Leadership Mis-Steps, and Dilemmas of Practice Associated with Collegial Inquiry - Joint Instructional Inquiry

Successful or Promising Practices	Notable Mis-Steps; Leader Edges of Growth	Constitutive Dilemmas and Challenges of Practice
1. Actions and Approaches During Entry/Diagnostic Phase: * Undertake detailed analyses of existing student achievement and learning data disaggregated by grade-level, race, gender, etc in order to characterize the range of differential learning outcomes for students across teachers and grade levels * Interview teachers & teacher leaders to determine: a) the extent and quality of instructional inquiry and collaboration; b) familiarity with the terms and strategies linked to ambitious, standards-informed instructional improvement (e.g. how well grade level standards are known) * Collect and analyze team agendas and protocols; lesson plans; grade level summative/formative assessments to map the sophistication of team processes and their link to quality instructional materials. **2. Establishing a Common Language and Methods for Joint Inquiry:** * With teachers, organize inquiry into powerful texts that introduce cutting-edge ideas and terms regarding standards-informed collaborative inquiry * Identify logic models, graphic organizers, and other conceptual tools that succinctly communicate chains of causation linking teacher mindsets and instructional choices to student outcomes * Introduce a model "cycle of inquiry" for collaborative inquiries that can be taught from starting elements, is codified within protocols, and gives precedence to root cause analysis and debate prior to enacting implementation of strategies. **3. Examining Levels of Rigor and Complexity in Teacher and Student Artifacts:** * Create structures and routines to *require* and *support* weekly lesson plans keyed to CCSS or similar standards, available to teacher colleagues * Scaffold detailed readings and discussions for understanding of well-validated frameworks for assessing academic rigor keyed to CCSS or similar standards * Assemble representative samples of teacher instructional artifacts (e.g., assessments and assignments) and student learning artifacts (e.g., responses to assignments). Develop protocols to code for: a) level of intellectual press in teacher artifacts; b) patterns of misunderstandings in student work artifacts. **4. Investigating and Learning More Powerful Instructional Approaches in Teacher Teams:** * *Disrupt privatized practice*: Establish structures, routines, and protocols to support increasingly sophisticated instructional observation cycles (e,g, Classroom Learning Walks using combinations of established protocols and more customized "look fors" as instructional priorities clarify) * Design/enact routines to link results of instructional artifact analyses to disciplined investigation of instructional shifts and adaptations to elevate rigor, engagement, and thoughtfulness * Establish protocols and routines (e.g. journaling cycles) to reflect individually and collectively on the outcomes of instructional shifts and adjustments. **5. Other Supports for Sustaining Ambitious, "Tightly Coupled" Collaborative Processes:** * Cultivate Instructional Leadership Teams (ILTs) to design and field test collaborative and instructional strategies among a cadre of teacher leaders * Focus the membership and work routines of senior leadership teams to promote depth of expertise in key practice areas * Principals and senior teacher leaders monitor regularly for the quality of collaborative processes linking artifact analysis with instructional rigor. * Arrange retreats and extended meeting sessions to permit more in-depth shared inquiry into shared problems of practice.	* **In a Context of Urgency, Skipping Vital Steps:** Several principals in this sample were aware of ways in which they skipped or gave short shrift to laying key groundwork for instructional teaming. Mistakes included: a) Not taking adequate time to fully diagnose the status of team processes and instructional expertise across the faculty; b) under-developing the expertise of teacher leaders before taking new teaming protocols school-wide; or c) spending inadequate time to establish in teachers' minds the need for deeper inquiry into practice. At some point these lapses had to be "walked back" for genuinely transformative professional learning to proceed. * **"Backing Off" in the Face of Teacher Resistance:** In a few cases, principals regreted not pushing forward with steps critical to instructional priority when teachers complained vocally about opening their doors to the observation of their teaching, or supplying teacher leaders with examples of their assignments and assessments for analysis. These delays in turn slowed progress. * **Staying Too Long at the Center of the Work:** All principals in this study acknowledged the need to assert their expertise in instruction, team process, and protocol design in the early phases of team building. All acknowledged the importance of recruiting teacher leaders as collaborators. For at least half of the sample, "gradual release" of team leadership and learning routines to teacher leaders was slowed by anxiety to maintain control over the pace and direction of the learning process. * **Under-estimating the Time Needed to Root Teacher Inquiry:** All principals were surprised to realize that some aspects of school transformation from a privatized to a public professional learning culture could not be rushed and required significant time. Two years was a consensus period for teachers to experience payoffs for making their practices public, to shift previous mindsets, and learn to process critical feedback robustly. In the meantime principals reported a variety of ways in which they pushed or chided their teachers around the pace of change, often undermining teacher trust and confidence.	* **How to Lead the Work When You're Also Learning the Work?** All 12 principals embraced in principle the stance of the leader/learner, and reported enjoying the give-and-take between moments of thought leadership and partnership. But they also experienced angst and discomfort in situations when the need for clear direction exceeded their real expertise and experience in ambitious instructional leadership. Most reported that being transparent with teachers about this and seeking teacher input helped to mitigate the fear of appearing deficient in the eyes of their colleagues. But the temptation to muddle through and skirt vulnerability was ever-present. * **Sustaining teacher engagement through uncomfortable complexity and plateaus in progress.** Standards-informed instructional collaboration is demanding and complex work for teachers. Several principals, including those with success in rooting the early work, reported challenges in keeping teachers encouraged and motivated when student learning gains lagged behind instructional improvements, or instructional problems resisted teacher efforts. Principal presence and teacher leadership were vital to encouraging teachers to stay engaged AND interrogating existing routines to better scaffold teacher inquiry and iterative learning. * **Keeping routines, protocols, and processes focused on "thinking" rather than mere "doing."** Conventions of teacher leadership and teamwork focus on "getting things done" rather than inquiry and discovery. In turn, learning complex protocols like the steps in a cycle of inquiry can easily become ends in themselves rather than vehicles for thoughtful learning. A few principals were particularly attuned to "blowing up" structures and routines that overwhelmed thinking with doing.

This spurred the principal and ILT members to design a new protocol slyly dubbed LATTE – "…*looking at teacher tasks and exams* to give each other feedback on how we can improve and better align our assignments and assessments, how we can improve the rigor." This combined with a new protocol to examine student work products shifted the capacity of the ILT to deepen its understanding of the instructional improvement process.

> *So those were like the 2 protocols that we really adopted and have worked to refine and that's our continued professional learning journey even and this year because every year it's here's what we did well, here's what we could have tightened up and we sit down as an ILT to say these things really worked well, like looking at student work, looking at the sample work that teachers brought in…so we shift it every year and changed our language to kind of really improve the way that we think about our own teaching, the practices that we are shifting, the things that we're creating and then the way that we talk about student learning.*

Second, most principals took personal responsibility for re-structuring ILTs around effective routines for convening, collaborating, and reflecting on individual and collective learning. In the process, they taught and modeled the enactment of roles, strategies, and monitoring routines associated with effective teaming. Examples of these routines and strategies included: the necessity of agendas and other protocols for guiding disciplined meetings within tight timelines; the enactment of facilitating roles within group process (e.g., time keeper; dispute referee; facilitator and "elbow facilitator") that permit the growth of further teacher leadership in local teams; and the management of systems using tools like Google Docs and Sheets to track the progress of work and socialize teachers into habits of systematic progress tracking. Further, principals made time to accompany senior teacher leaders into more local team meetings, observing their facilitating of meetings and providing formative feedback one-on-one and in ILT progress discussions. While not always comfortable for teacher leaders, principals saw this level of "shoulder-to-shoulder" engagement, along with weekly ILT time for reflecting on leadership dilemmas, as essential to both the early phases of teacher leader growth and the diffusion of common adult learning practices across the professional community. As one high school principal observed:

> *ILT has to be bought into this vision of what the power of the course teaming could be, this is what it would look like, like this is how we get from 12 people understanding something to 204. So we laid out a meeting pattern and even though that's sort of a tangible technical thing, it helped the ILT see…there were multiple levels of leadership and one of the hardest things for the ILT this year was to understand like, when are you wearing a teacher hat, when are you wearing*

> *like the facilitators hat and then when are you wearing your instructional leader - you have to step out of both of those roles and look at a big picture cause so many of them were so zoomed in on just their department and didn't understand the difference between thinking like a teacher and thinking like a leader.*

Another priority of principal pedagogy among teacher leaders in ILTs involved co-learning inquiry methods for continuous improvement – referred to as "cycles of inquiry" – that could be adapted and sustained for instructional learning (Militello, Rallis & Goldring, 2009; Timperley, 2011). Again, this was a core methodology taught by the principal's doctoral program as well as an emerging district expectation for competent principal leadership (Cosner, Tozer, & Zavitkovsky, 2016). It provided a disciplined structure for sequencing steps of problem identification, data collection and interrogation, innovation and planning, action and assessment intended to help teams gauge the impact of their interventions against relevant metrics (Smylie, 2009; Bryk et al., 2015).

Yet while principals had access to several models as starting points, they understood themselves to be learners as well as teachers in this arena, and were left to discover with their teacher leaders how to grow their expertise from preliminary steps, and by extension, how to introduce manageable cycles of inquiry into teacher thinking and team processes. This yielded several variations on naming and structuring of these cycles across the schools. As an example, one high school principal shifted his nomenclature from "cycles of inquiry" to "theories of action" after determining with his teacher leaders that the most important early work for teacher teams was learning to think in terms of causal linkages and cascades, rather than enacting the formal steps of a particular sequential inquiry cycle. He further used the image of a "corkscrew" to drive home the iterative and evolving nature of inquiry-based professional learning: "So really a cycle of inquiry is more like a corkscrew, right? Because by the time you get to the new thing your problem identification is going to change slightly and then everything else is going to change…." In this kind of collaborative learning it is vital to cultivate mutual trust and an ethos of continual improvement and approximation, one in which "…everyone feels comfortable saying something ignorant and learning together to come up with a collection of shared understandings…that has

the trust needed to constantly re-evaluate what we're doing and how we're doing it and how we're assessing our progress to get us to where we want to be."

Finally, and returning to Table 3, principals engaged teacher leaders in ILTs to co-design and experiment with a range of analytic strategies keyed to curricular rigor and instructional quality. On the curricular side, principals and teacher leaders used regular meetings as well as retreats and extended days to read and discuss systems of curricular standards linked to the Common Core as well as frameworks for conceptualizing academic rigor and cognitive press such as Webb's Depth of Knowledge (Webb, 2007). Teacher leaders then collected evidence of student learning (e.g., written assignments; assessment results) and teacher work artifacts (e.g., assignments, assessments, and grading rubrics) to sharpen their understanding of alignment to standards, and analyzed the range of ways that student learning and teacher thinking fell short of these standards.

At the same time, on the instructional side, principals and teacher leaders set the stage for making classroom observations and discussions of instructional quality a routine feature of weekly school life. This would also start by investigating and dissecting established protocols for classroom observation like Danielson's Framework for Teaching (Danielson, 2011), and using parts of them to practice classroom visits. As analyses of student and teacher artifacts advanced, so teacher leaders became more expert in identifying specific "look fors" to link understandings of rigor to targeted instructional innovations and strategies. Thus the emerging cycles of inquiry in the more sophisticated schools in this study – about one-third of the 12 principals – began to approximate levels of interdependent collaboration reported in recent research into effective standards-aligned joint inquiry (Stosich, 2016; Forman et al., 2017). At this level of inquiry, the professional learning of principals and teacher leaders was integrated and intertwined to an almost indistinguishable degree.

Discussion

Our analysis revealed a wide range of coordinated strategies enacted by these 12 principals to simultaneously disrupt non-developmental mindsets and assumptions among teacher leaders and induct teacher leaders into routines of collaborative analysis and decision-making around curricular rigor and

instructional quality. Principals typically used school-wide Instructional Leadership Teams (ILTs), a collaborative setting mandated by their school district, to both train and mentor teacher leaders around instructional improvement. Development within ILTs as holding environments was particularly focused on learning the give-and-take between re-culturing teams toward developmental mindsets, and learning progressively more powerful analytic cycles around problems of instructional practice. This work challenged both principals and teacher leaders to make their thinking and leadership practices available for public viewing and critical feedback – a bracing transactive process subject to fits, starts, derailments, and breakdowns. But the available evidence indicates that in each of the 12 schools, significant movement was realized from initial cultures of privatized practice and loosely coupled professional networking, to more tightly-coupled collaborative cycles of inquiry effectively linking data analysis around curricular rigor and instructional quality. Here we highlight three emerging patterns in this body of evidence that point toward areas for further investigation and granular specification of leadership strategies.

First, while we did not address it directly, the data regarding the enactment of collegial and joint inquiry bear out Drago-Severson's contention that teacher leadership will falter if principals fail to attend to establishing key pre-conditions for introducing inquiry practices (Drago-Severson, 2014). In this regard, how principals personally engaged the work of teacher teams was seen as by far the most potent contributor toward deepening and consolidating collegial trust and confidence across the faculty. Particularly evident was how several principals wrestled with a generative tension between bringing clear vision and powerful ideas to the collaborative table as a "thought leader," on the one hand, and soliciting ideas and engagement from the circle of teachers and teacher leaders as a "thought partner." One sine qua non of navigating this tension for all principals in our sample involved being consistently and actively present in as many team meetings as possible, particularly in the early phases of building teacher leadership and work routines. From there, the majority of principals discussed adopting and modeling a learner's stance in their engagement with teachers so that, working "shoulder-to-shoulder" with teacher leaders, they could judge the pace of gradual release of team management responsibilities. Several principals discussed the motivational and relational opportunities posed by introducing generative

readings and resources into group discussions as occasions for threading the thought leader/thought partner tension. Powerful readings allowed principals to demonstrate expertise while inviting the airing of differences of opinion and interpretation, thus modelling the tempered (and often tricky) give-and-take of generative professional conflict. As teams and principals gained facility with engaging and debating complex ideas, their collective capacity to trust and support one another through uncertain periods of collaboration became more robust. But for several of our more control-oriented principals, the trust and capacity to become vulnerable in these conversations with junior colleagues was acknowledged as a vital edge of professional growth.

Second, our data reveal the degree to which principal leadership involves the creative interplay of intuition and analysis at the heart of "design thinking" (Martin, 2009; Mintrop, 2016) and "designerly ways of knowing" (Cross, 2006). This includes the design of "holding environments" like ILTs for the development of teacher leaders. Awareness of design principles is of course ubiquitous in discussions of curriculum and instructional practice – traditionally the work of teachers (Huizinga et al., 2014) – as well as in constructivist perspectives on student learning (Mehalik et al., 2008; Adams & Bell, 2016). Design as a mode of thinking and working is less common in the literature of school leadership than discussions of concerns like trust building, effective communication, articulating a vision for improvement, and motivating adults to question and alter their practices. Yet as Spillane and Coldren (2011) note, "…design is a component of leading and managing any organization," while "…savvy school leaders strive to maintain and manage their new designs over the long haul, at least as long as they serve particular essential purposes" (pp 5-6).

This was demonstrably clear in the work priorities of these 12 principals, who devoted meticulous attention to crafting and improving the structural features of systems, schedules, routines, protocols, and tools for professional learning and collaboration at every level of team organization. Further, they took considerable care to induct and socialize emerging teacher leaders into key features of design thinking. These included: a) the importance of consulting and collaborating with the end user through the design process; b) the expectation that design involves generative failures, non-linear progress, and occasional

plateaus; c) the primacy of diagnostic inquiry and progressive problem-finding to surfacing the needs and concerns of users; d) the importance of measuring the impacts of designs to inform their iterative improvement; and e) the pedagogical import of design features in shaping and evoking (or alternately, impeding!) the thoughtfulness and mindsets of those who enact and co-create designs (Mintrop, 2016). Our evidence suggests that while leadership through design is complex work, its cultivation becomes a critical asset for replacing traditional compliance and accountability frames with more effective and professionally satisfying structures for joint inquiry. And it is work that administrators, teacher leaders, and collaborating teachers can genuinely enjoy, improve, and sustain in team settings.

Finally, the most common "A-HA" insight across the 12 principals we interviewed was the realization that re-culturing a school toward developmental values through the agency of teams is a time-intensive enterprise. Two years seemed to be a minimum consensus period in which well targeted and designed teacher development processes could begin to yield enough expertise among teacher leaders to enact tightly coupled cycles of curricular and instructional inquiry. Several factors emerged that contribute to this timeframe, including the severe limits on available time in schools for professional collaboration; slow processes involved in building relational trust among leaders and teachers; the investment of time necessary to establish "safe" conditions for teachers to learn feedback routines and develop the self-regulatory capacities implicated in giving and receiving critical feedback; and the time needed to identify and acquire complex skills around team design and curricular/instructional analysis. Again, referencing his use of the LOIS model described earlier, one elementary principal described a phase-like process:

> *We basically spent one full year just on speaking and listening, just that one thing. Then we spent the second year on 2 things, continuing speaking and listening and RTI right? And now we're doing 6 because people are learning how you can…better tweaking the "O" box to enable us to have 6 at a time right? So that's kind of the phases that I've seen is like just acceptance and belief and the LOIS model, learning all of the routines and things in the "O" box that allow you to execute a cycle of improvement and…putting all of it together multiple ways and times….*

While many time constraints pertained to teacher learning, our evidence was clear that constraints on the knowledge, skills, and dispositions of principals were equally potent in retarding teacher learning

and team development. Most typically the urgency and anxiety that principals felt to "move the needle" on student learning in a high pressure context produced unforced errors in the re-culturing work of every early career principal in the study. These errors were arrayed along the spectrum of either too little or too much direct presence in the work of designing and managing teams, and required leaders to reevaluate how they were calibrating the balance between thought leadership and thought partnership. Our concluding observation is that maturing teacher leadership in most schools played a decisive factor in socializing principals toward a more adaptive tension between leadership and partnership (Spillane & Coldren, 2011). As one particularly "Type-A" principal in our sample reflected:

> *And so those are things that I think I started to really appreciate more and understand that if I was really going to build capacity, I had to build my own as a principal and not just be the principal who directs but the principal who learns and learns with and learns from my leadership team and engage with them in a way that they also, like I might have read that article or it might have been something that was part of my own doc work, but now I need to play student with them and maybe learn something new from it and be open to that. So you know I mean that's been a - it's been a couple of years of my own journey….*

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