Virtual Coaching for Instructional Leaders: A Multi-Method Investigation of Technology-Enabled External Assistance

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Background: Education reforms over the last several decades have relied heavily on external assistance to help schools increase capacity for improving outcomes, but investing in sustained outside coaching and support is increasingly difficult with diminishing federal, state, and district resources. One under-investigated possibility for maintaining affordable external assistance is to leverage new virtual technologies.

Purpose: This proof-of-concept study explored the potential of virtual coaching as a means for providing a cost-effective, alternative model of ongoing external assistance to principals and leadership teams engaged in collaborative instructional improvement.

Intervention: Researchers adapted an existing assistance framework from an established instructional improvement model, with published studies of effectiveness in the traditional face-to-face context, and substituted virtual methods of coaching and support for ongoing monthly settings with school leaders.

Research Design: The study used a mixed-methods design, including video-recorded meetings, rubric-based coding and ratings, interviews, focus groups, and coaching logs to investigate implementation at three elementary and two middle schools during one full academic year.

Findings: Evidence suggests that the blended coaching model served as an adequate and cost-effective substitute for traditional face-to-face coaching at all five pilot schools. The virtual coaching format was particularly effective for conducting one-on-one planning meetings with principals and served as a catalyst to expand principals’ growth and ownership of the instructional improvement process. The authors also document several challenges that emerged related to limitations of human interaction in the virtual context.
Conclusions: Findings suggest that blended or virtual models are worth consideration as one potential solution for maintaining external support in the midst of diminishing fiscal resources. For schools with verified leadership and technology readiness, the availability of virtual models might translate to greater distribution of outside expertise across a wider number of schools, or enable some funds to be repurposed for other critical priorities. Findings also have implications for the design of external assistance programs and services. Evidence from the study highlights distinct benefits of the virtual format, which might enable more strategic distribution of monthly support, increase capacity building, and improve access to high-quality expertise. Lastly, findings provide guidance for research and policy around technology-supported professional learning, pointing to the importance of aligning solutions with contexts, attending to sound quality and room configuration, and addressing challenges with the naturalness of interaction.

Education reforms over the last several decades have relied heavily on external assistance and expertise to help schools increase capacity for improving outcomes. Studies of external assistance show mixed results, but available evidence suggests that properly designed assistance models with appropriately qualified experts can lead to significant improvements in school functioning, professional learning, and student achievement (Datnow & Honig, 2008; Finnigan, Bitter, & O’Day, 2009; Saunders, Goldenberg, & Gallimore, 2009). Unfortunately, few schools receive adequate assistance due to budget constraints and diminishing federal, state, and district resources (Leachman & Mai, 2013).

One emerging possibility for maintaining affordable external assistance is to leverage new virtual technologies. Preliminary studies have documented the potential value of virtual technologies for blended forms of professional development, online learning communities, and coaching of individual teachers (Hramiak, 2010; Israel, Carnahan, Snyder, & Williamson, 2013; Kidd & Murray, 2013; Owston, Wideman, Murphy, & Lupsheynyuk, 2008). However, no studies have investigated whether a virtual interface can adequately facilitate sustained school improvement services such as external coaching for principals and leadership teams.

This “proof-of-concept” study explored the potential of virtual coaching as a means for providing a cost-effective, alternative model of ongoing external assistance to principals and teacher-leaders at five case-study schools. The research team adapted an existing assistance framework from the Getting Results (GR) instructional improvement model, recognized for its published studies of effectiveness in the traditional face-to-face context (Saunders et al., 2009), and substituted virtual methods of coaching and support for monthly site-based settings with school leaders. The goal of this initial research was to investigate whether relying exclusively on virtual coaching for these ongoing site-based interactions could
demonstrate fidelity of implementation for leadership settings comparable to the research-tested face-to-face implementation support.

The following sections provide an overview of the background literature on external assistance, a summary of relevant studies on the use of virtual technologies, and a description of the study design and methodology, including a detailed outline of the GR model and assistance framework. We then present the results from the study, including some unexpected findings regarding the potential benefits of virtual coaching in developing principal capacity for instructional leadership. We also document several challenges that emerged related to limitations of human interaction in the virtual context and discuss fiscal, educational, and technological implications for future research and policy.

CONCEPTUAL FRAMEWORK

RESEARCH ON EXTERNAL ASSISTANCE

Emphasis on external assistance has increased significantly in the last several decades with the convergence of policies and reform initiatives aimed at increasing accountability for student performance. States and districts are required to create and sustain systems of support for school improvement, particularly for schools that have failed to make adequate yearly progress (U.S. Department of Education, 2006). But even schools that are meeting and exceeding standards are under increasing pressure to close the achievement gap and improve results, especially as states prepare for new college- and career-ready standards and corresponding assessments. This combination of policies and demands has resulted in millions of dollars invested in support and expertise from a variety of external organizations to build school capacity for instructional improvement.

Key Terminology

There are numerous terms and labels associated with organizations providing external assistance, including technical assistance providers, professional development organizations, vendors, university partners, and school management organizations, among others. Honig (2004) offers a helpful distinction between intermediary organizations and other types of organizations providing various forms of external assistance. She defines intermediaries as “organizations that occupy the space in between at least two other parties . . . to mediate or to manage change for both those parties” (p. 67). This distinction is particularly helpful for policymakers and administrators who are responsible for identifying qualified providers to assist with systemic reform. For the purposes of this article, since the
relevance of the study findings and implications is not limited to the role of intermediary organizations, we use the more expansive term external assistance to represent any organization or entity from outside the school that is working to create and sustain conditions and capacity for improvement of teaching and learning within the school.

Similarly, there are a variety of terms used to describe the individual person providing external assistance, including coach, mentor, advisor, and consultant. Many schools also have internal coaches or specialists—members of the staff who provide content expertise and mentor individual teacher development. In this paper, the term coach always refers to an external coach who works with principals, leadership teams, and teachers to build school capacity for instructional improvement (Mayer, Grenier, Warhol, & Donaldson, 2013).

While there is significant variation in the labels organizations use and types of assistance they provide, the unifying assumption behind external assistance is that schools lack sufficient capacity to improve on their own (Finnigan et al., 2009) and external organizations can infuse new resources, knowledge, and perspectives that might expand existing horizons of practice (Datnow & Honig, 2008; Huberman, 1995; Little, 2003). In the best-case scenario, they also operate as a stabilizing influence on school improvement efforts, providing just the right balance of support and pressure to help school leaders stay focused on priorities and follow through on commitments (Goldenberg, 2004; McDougall, Saunders, & Goldenberg, 2007).

**Summary of Mixed Results**

Despite the substantial investment and broadly accepted rationale for external assistance, limited research exists regarding effectiveness of assistance efforts, and the available evidence suggests mixed results (Datnow & Honig, 2008; Finnigan et al., 2009). In one of the earliest studies, the Rand Corporation evaluated nearly 300 local projects involving change agents and found minimal or no effect of external assistance related to federally funded programs (Berman & McLaughlin, 1978). Several more recent studies also provide a cautionary view of external assistance, drawing attention to significant variability in external organizations’ capacity to assist change (Smylie & Corcoran, 2006) and describing demands on the individual coach or provider so onerous that only the most skilled and dedicated can perform the role effectively (e.g., Poglinco et al., 2003). Finnigan et al. (2009) summarize two studies in Chicago and California and report that assistance provided to low-performing schools was “not sufficiently targeted, coherent, or intensive to influence instruction and
student learning in a meaningful way” (p. 3). These findings corroborate other research on professional development that suggests support and training must be intensive, sustained over time, focused on specific content, and coherently integrated to yield a discernible effect on practice (Desimone, 2002; Garet, Porter, Desimone, Birman, & Yoon, 2001).

On the other side of “mixed results,” a growing number of studies point to the promise and potential of well-designed external assistance programs. McLaughlin (1990) revisits the Rand change agent study cited above and updates the analysis with new examples of effective external assistance that combined well-articulated core strategies with adaptive implementation methods. Fullan, Bertani, and Quinn (2004) summarize successful school improvement efforts in Canada, England, and the United States where “active” external partners providing just the right amount of “well-placed pressure” have played a vital role in the change process (External Partners section). Mayer et al. (2013) describe the successful outcomes of coaches in the Together Initiative that used joint work, brokering between stakeholders, and modeling practices to engage schools in productive cycles of continuous improvement. And several researchers document examples of effective assistance partnerships between schools and universities (e.g., Gallucci & Boatright, 2007; Goldenberg, 2004). Some of the recent studies also demonstrate that under certain conditions with well-defined models, external assistance can lead to significant improvements in student achievement. In one example, Biancarosa, Bryk, and Dexter (2010) published results of a four-year longitudinal study providing evidence that one-to-one instructional coaching in the Literacy Collaborative (LC) contributed to a 32% increase in student learning over baseline scores with a value-added effect size of 0.43.

As part of a special issue in the Peabody Journal of Education devoted to promises and pitfalls of external assistance, Datnow and Honig (2008) introduce several examples of assistance relationships that illustrate how external partnerships might better support teaching and learning (pp. 323–327). Honig and Ikemoto (2008) highlight the importance of “adaptable assistance relationships” with an example from the Institute for Learning at the University of Pittsburgh (pp. 328-363). Coburn, Bae, and Turner (2008) describe the importance of managing complex “authority relationships and status differentials” (pp. 364–399). Park and Datnow (2008) examine how Successful For All worked to collaboratively build knowledge and connections across various levels and dimensions of the school system while implementing a highly prescribed reform model (pp. 400-422). Marsh, Hamilton, and Gill (2008) explore the combination of structured assistance and accountability in the Edison Schools model and discuss implications for achieving school improvement (pp. 423-458). And Supovitz
(2008) describes several examples, including a detailed illustration from the America’s Choice model, to elucidate the need for increasingly sophisticated partnerships that purposefully meld internal and external support.

Summary of Research on the GR Model

One final example of effective external assistance comes from published research on the GR model, the assistance framework adapted for this study. Building on Goldenberg’s (2004) case study of successful school change, Saunders et al. (2009) conducted a five-year scale-up study implementing this framework with nine Title I elementary schools serving more than 14,000 students. Achievement in the GR schools rose by 41% overall and by 54% for Hispanic students, with the most pronounced gains occurring in the last three years of the study. Despite relatively identical baseline scores, six demographically similar schools, selected at the beginning of the study to serve as “controls,” had no comparable achievement gains over the same five years. The overall effect size was 0.75, a magnitude considered in the high–moderate to large range (Cohen, 1988). Schools in both groups were challenged by histories of low achievement, large numbers of English learners, and high percentages of students receiving free or reduced-price lunch. An external evaluation during the last year of the study revealed that schools in the experimental group had a sharper focus on academic goals and achievement outcomes, stronger collective commitment, higher expectations, and attributions for student achievement more focused on teachers’ instruction rather than other external factors (McDougall et al., 2007).

Saunders et al. (2009) reported that the achievement gains and shifts in school culture were obtained only after significant adjustments to the implementation design and especially the assistance framework. These adjustments were introduced in the third year of the five-year project, and included more fully specified protocols and a systemic approach to site-based coaching, including increased onsite support to principals, teacher leaders, and grade-level teams. The generalizability of these results is limited by the sample size and the possibility that effect sizes were elevated by the “developer as implementer” effects (Borman et al., 2005; Lipsey, 2003). A large commercial education organization developed a program based on this research and scaled it up to a broad network of schools, including middle and high school partners. Scale-up findings and observations were reported in Gallimore, Ermeling, Saunders, and Goldenberg (2009) and Graff-Ermeling (2007).

Overall, the research on external assistance is still inconclusive, but findings from both ineffective and effective external assistance programs point to some common themes and practices. Broadly stated, available
research suggests that external assistance should be guided by a clearly specified framework, adaptive to local knowledge and circumstances, focused on multiple levels of the school system, coherently aligned with other improvement efforts (both internal and external), and strategically distributed to maximize intensity of impact. These findings are consistent with other educational research showing that more fully specified and supported interventions typically produce better results (e.g., Bodilly, 1998; Desimone, 2002; Goldenberg, 2004).

These common themes and practices for external assistance provide important direction for research, policy, and design of school and instructional improvement programs, but they also present a daunting challenge: Investing in sustained outside support, even when highly effective, is difficult to prioritize in school budgets without a substantial ongoing funding source. This creates a challenging predicament—increased accountabilities and expectations for performance and capacity building that require assistance from external partners, but diminishing funds and resources to adequately address the problem (Leachman & Mai, 2013).

RESEARCH ON VIRTUAL TECHNOLOGIES

One emerging possibility for maintaining affordable external assistance is to leverage new virtual technologies as an alternative method for supporting school and instructional improvement efforts. While the use of technology is rapidly expanding in teacher education and ongoing professional learning, there is scant research available on the “forms and effectiveness” of technology in these various settings (Kidd & Murray, 2013, p. 165). Most of the limited research is related to virtual learning communities for pre-service and in-service educators or other professionals (Charalambos, Michalinos, & Chamberlain, 2004; Hramiak, 2010; Matzat, 2013; Sallnas, 2005; Swinglehurst, Russell, & Greenhalgh, 2008), and online or blended models of professional development in K–12 and higher education (Berger, Eylon, & Bagno, 2008; Brooks, 2010; Fisher, Schumaker, Culbertson, & Deshler, 2010; Fishman et al., 2013; Owston et al., 2008; Pettit, 2005; Powell & Diamond, 2011). The scarcity of research on virtual models of coaching and assistance is even more pronounced, with a few studies focused on the use of virtual technologies for individual teacher mentoring (Burgess & Mayes, 2008; Israel et al., 2013; Quintana & Zambrano, 2013; Schrum, English, & Galizio, 2012). A 2013 special issue of Professional Development in Education also highlighted other emergent technologies being investigated for the support of teacher learning, including “digital, Web 2.0, social media, mobile, and information technology tools” (Kidd & Murray, 2013, p. 165).
In the area of virtual collaboration and online communities of practice, two articles were particularly instructive. Matzat (2013) describes the mixed results of online virtual communities and reports findings from a large-scale comparison study with Dutch teachers of secondary schools showing positive outcomes associated with blended forms of collaboration where online participants also interact in offline networks. Sallnas (2005) conducted a study with 60 university students and administrative personnel comparing the different effects of text-chat, video, and audio conferencing on participant perceptions of presence and performance. Results showed that people use fewer words per second in text and complete tasks most efficiently with audio or video communication.

From the research on blended professional development (PD), Owston et al. (2008) provide a helpful synthesis of three program evaluations. They define blended learning or PD as a “combination of face-to-face experiences, in which learners are co-located, with online experiences, where learners are not at the same location” (p. 202). The blended learning programs included in the review showed limited impact on student learning, but were effective at providing opportunities for job-embedded learning and collaboration with a moderate influence on classroom practice.

Of the available literature on virtual assistance, the most relevant paper we located was a proposed framework for virtual coaching of individual special education teachers (Israel et al., 2013). The authors provide a detailed description of a model derived from research on “situated cognition, media naturalness theory, and effective ongoing professional development” designed to engage special education teachers in cycles of reflective practice through remote observations and video conferencing (p. 198). The article also provides practical guidance for implementation and highlights important ethical considerations for the virtual context.

These preliminary studies highlight the potential of new technologies to redefine the design and support of individual and collaborative professional learning. However, we found no significant literature on sustained virtual assistance for school leaders and school improvement initiatives.

**DESIGN AND PURPOSE**

The principal goal of this study was to explore the potential of virtual coaching as a vehicle for providing a cost effective, blended model of ongoing external assistance. Researchers documented the implementation experience of five virtually supported pilot schools from a district where several schools had previously implemented the face-to-face version of the Saunders et al. (2009) GR model.
DESCRIPTION OF GR MODEL AND ASSISTANCE FRAMEWORK

The original GR model design included a detailed framework to guide external coaches in their support of school leaders to systematically improve teaching and learning. The framework placed significant emphasis on providing principals, leadership teams, and teacher workgroups with predictable, stable settings for instructional inquiry combined with strategic assistance and field-tested protocols (Goldenberg, 2004; Saunders et al., 2009). The primary protocol outlined specific inquiry tasks for teacher workgroups to examine standards and assessments, identify common student academic needs, jointly develop instruction to address these needs, and analyze student work resulting from these jointly developed lessons. The model did not prescribe particular instructional content, but rather focused on coaching leaders and teams to use the inquiry protocol for ongoing study and improvement of practice related to pressing student needs.

In this original “face-to-face design,” external assistance involved a dedicated setting for each role group in the system (see Figure 1) and a certified coach who was responsible for shepherding and sustaining the work of each setting toward the final goal of helping teacher workgroups improve instruction and student outcomes. Each month, the coach facilitated a Principal Planning Meeting (PPM; labeled “A” in Figure 1) at individual sites to debrief implementation progress, help principals plan for leadership team meetings, and strategize on needed assistance for workgroups and facilitators. The coach attended the monthly Instructional Leadership Team meetings (ILT; labeled “B”) to work alongside the principal and provide additional training on the inquiry protocol. The coach also targeted specific teacher workgroup meetings each month based on emerging needs (represented by dotted line to “C”). The ILTs included teacher-facilitators from each workgroup and other school-based instructional specialists.

In addition to these regular site-based settings, the coach supported two district-level settings involving leaders across participating schools. The first was a monthly Regional Administrator Meeting (labeled “D”) where district leaders and principals convened to discuss progress, receive additional leadership training, and share strategies across schools. The second was the annual summer and midyear institutes (labeled “E”) for principals and facilitators to receive initial training on the program framework and later discuss emerging instructional findings.
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**DESCRIPTION OF BLENDED MODEL** The new "blended model," specifically designed for this pilot study (see Figure 2), retained the face-to-face training for institutes and monthly Regional Administrator Meetings, but schools relied exclusively on virtual, synchronous interactions (bidirectional video streams and screen-sharing functionality) for the coach's ongoing assistance to individual principals and ILT settings. The coach's monthly strategic visits to workgroups were also replaced by site administrators (principals, assistant principals, and instructional specialists if available) taking on expanded responsibility for this role, which was previously shared by the coach and principal in the original GR model. The combined reduction of travel time and associated costs enabled by these modifications, plus the reduction of additional time typically allocated for arrival, pre-
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RESEARCH GOALS

This pilot project focused primarily on evaluating implementation quality and was intended as a modest proof-of-concept study to determine whether the blended approach justified additional research. The initial hypothesis being tested was whether a blended model of support, focused on assistance to principals and ILT members and relying exclusively on virtual coaching for ongoing site-based interactions, could demonstrate fidelity of implementation for leadership settings comparable to research-tested face-to-face implementation services. The researchers operated under the tentative assumption that if these most proximal measures of implementation quality (stability and productivity of PPM and ILT) were comparable to previous measures of implementation with face-to-face services, then one might also expect comparable results in subsequent distal outcomes (productivity of workgroups, improvements in teaching and learning) as previously established with the original face-to-face design. Future studies could then further investigate these distal links in the chain of effect. The specific research questions (RQs) for this initial study were the following:

**RQ1:** To what extent do virtually supported leadership teams demonstrate fidelity of implementation of the GR instructional improvement model comparable to that of a traditional face-to-face implementation?

**RQ2:** What specific implementation strengths and challenges emerge that are unique to the virtual assistance framework?
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RQ1: To what extent do virtually supported leadership teams demonstrate fidelity of implementation of the GR instructional improvement model comparable to that of a traditional face-to-face implementation?

RQ2: What specific implementation strengths and challenges emerge that are unique to the virtual assistance framework?

RQ3: What are some of the pivotal factors and suggestions for effective implementation of the blended model from the perspective of the study participants?

RQ4: To what extent were virtual coaching services provided within the design constraints of the blended model (projected hours for preparation and delivery of PPM and ILT)?

METHOD
PROFILE OF CASE-STUDY DISTRICT AND SCHOOLS
This project took place in Treston School District (pseudonym), a mid-sized metro-suburban district in the northwest region of the United States with about 30,000 students and 52% on free–reduced lunch. Treston had just embarked on a GR model implementation within the district with the original GR model design, receiving face-to-face support services from a certified coach (employed by the district) who provided coaching services for the district's leadership teams. Teachers College Record, 117, 110303 (2015)
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SCHOOL SELECTION

The study focused on two “first-year implementing schools” with no previous experience and three “continuing schools” entering a third year of implementation. This design enabled researchers to compare results of virtual support in two distinct contexts: (a) schools and principals with no prior implementation experience, and (b) schools with substantial background that would likely be candidates for a gradual release of responsibility.

In each of the previous years at Treston, the GR-certified coach worked closely with district staff to guide the selection of participating schools based on level of need (i.e., persistently low achievement scores) and “readiness-to-benefit” profiles generated from the standard program readiness instrument. The instrument included seven dimensions: administrator capacity, facilitator capacity, content expertise, potential for buy-in, experience with collaboration, available settings, and timing/bandwidth. Each dimension was rated on a scale from 1 to 4 (limited, borderline, adequate, strong). To qualify for implementation, schools needed
a minimum score of 20 across all seven dimensions and at least a rating of 3 (adequate readiness) for the “administrator capacity” dimension. The district staff and coach used these same criteria to recruit and select the two first-year implementing schools for this project.

For continuing schools, a total of five schools were entering the third year of program implementation in 2012–2013, all with adequate readiness scores. At two of these schools, however, the district assigned new principals with no prior implementation experience, so the research team excluded these schools from the selection process. The other three continuing schools had the same principals for each of the previous two years and agreed to participate in the study. Table 1 lists the final selection of pilot schools and corresponding readiness data. The sample included three K–6 elementary schools and two middle schools (grades 7–8). All school names are pseudonyms.

Table 1. Trenton School District Blended Model Pilot Schools

<table>
<thead>
<tr>
<th>School Pseudonym</th>
<th>Grade Levels</th>
<th>First Year or Continuing</th>
<th>Title I Percentage</th>
<th>Readiness Score (out of 28)</th>
<th>Technology Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kite Elementary</td>
<td>K-6</td>
<td>First Year</td>
<td>52%</td>
<td>22 (Adequate)</td>
<td>Verified</td>
</tr>
<tr>
<td>Dawn Elementary</td>
<td>K-6</td>
<td>First Year</td>
<td>43%</td>
<td>20 (Adequate)</td>
<td>Verified</td>
</tr>
<tr>
<td>East Elementary</td>
<td>K-6</td>
<td>Continuing</td>
<td>78%</td>
<td>22 (Adequate)</td>
<td>Verified</td>
</tr>
<tr>
<td>Sun Middle</td>
<td>7-8</td>
<td>Continuing</td>
<td>46%</td>
<td>25 (Strong)</td>
<td>Verified</td>
</tr>
<tr>
<td>Rise Middle</td>
<td>7-8</td>
<td>Continuing</td>
<td>64%</td>
<td>26 (Strong)</td>
<td>Verified</td>
</tr>
</tbody>
</table>

The certified coach assigned to work with these schools was the same individual who had supported the face-to-face implementation in Treston over the previous two years. She had a close working relationship with the district and particularly the principals at the three continuing schools. She was a former teacher and director of curriculum and instruction with a strong background in facilitating teacher professional learning. We used the generic term coach or the pseudonym “Amber” throughout the paper when referencing the coach’s role.

TECHNOLOGY CAPACITY

In addition to the standard readiness criteria, all five schools participated in a pre-implementation site visit and verification process for “technology capacity” specifically designed for the blended implementation model. Each school was required to have a reliable Internet connection, access to a meeting room with a multimedia projector, an adequate computer-aided or phone speaker system for communication between the coach and ILT members, and individual laptops with built-in Web cameras.
Each participating school accessed the virtual meetings through Adobe Connect Pro, a Web conferencing interface used to facilitate bidirectional video streams and screen-sharing functionality. School site participants could view a live-streamed image of the coach in a small box on the right of the screen while viewing the coach’s shared desktop, slide presentations, or other files on the left side of the screen. The coach could simultaneously view side-by-side live-streamed images from each of the participant webcams. The software also included options for public and private chat sessions, polling the audience, virtual whiteboards, and buttons for expressing agreement/disagreement or to signal a question, but these features were not utilized. Principals and leadership team members learned how to access Adobe Connect Pro during their first site-level meetings. No specific training was provided to the coach or school participants on the various software functions.

DATA COLLECTION AND ANALYSES

This study used a multiple method research design with concurrent triangulation (Creswell & Plano Clark, 2007). Data collection included digitally recorded audio and corresponding transcriptions of ILT focus groups and principal and district administrator interviews; digitally recorded video and field notes from selected ILT meetings; and document retrieval. The research team also collected data from “ILT global ratings” conducted twice a year by the certified coach as part of standard evaluation processes. In addition, the coach agreed to keep a detailed spreadsheet log of hours and field notes across each month for all five project schools and corresponding virtual settings.

Data analyses included qualitative analysis, rubric-based scoring, and systematic coding of data from various sources. Researchers analyzed data during and after the nine-month data collection period using a constant comparative method (Glaser & Strauss, 1967). Each stage of data analysis informed the next stage, as patterns and themes gradually emerged and subcategories began to develop. We used triangulation to corroborate findings from multiple data sources, across individuals, time, and settings. We searched for alternative explanations contrary to the emerging themes and categories (Miles & Huberman, 1994), and used member checks to obtain feedback on emerging findings at strategic intervals (Lincoln & Guba, 1985).
Analysis Process for ILT Global Ratings

For the two previous years in Treston, as part of routine evaluation and feedback services for the standard face-to-face model, the coach assigned midyear and end-of-year ILT global ratings to each school using an established rubric (see Appendix A) that included a dimension for stability of the setting and dimensions for each of the three standard segments of the ILT (debriefing, training, and planning). Every December and June, following a rating calibration exercise with program leaders, coaches assigned each school ILT an implementation score on a scale from 0 (not functioning) to a maximum score of 4 (thriving) for each of these four dimensions. As a general rule, average functioning ILTs typically received a rating of 2 (functioning), and schools that were continuing with the model for multiple years were expected to demonstrate incrementally higher scores each year, or at least maintain the same level of implementation status.

To increase the rigor of the ILT ratings for this study and document the rationale behind each of the scores, a member of the research team joined the coach for both rating sessions in 2012–2013 and preserved these sessions with an audio recorder. The researcher asked the coach to provide descriptions of each school’s ILT without referencing any scores or rubric categories. Both the coach and researcher then independently scored the ILT and shared ratings to check for reliability, repeating this process for all midyear and end-of-year ratings. Overall inter-rater agreement for exact agreements equaled 93% using the formula: number of agreements (37) divided by number agreements plus disagreements (37+3) multiplied by 100. Overall inter-rater agreement for exact plus adjacent agreements equaled 100% using the same formula. To assign a final score for the three ratings that differed, the researcher and coach discussed rationale and established a consensus rating, erring on the side of the lower score.

Once all ILT ratings were established, the researcher conducted a comparative analysis between these 2012–2013 scores and ILT global ratings from the previous two years in Treston when schools were receiving standard face-to-face services. For the two first-year schools, researchers compared scores with corresponding ratings from the first year of implementation at eight other schools in Treston in 2010–2011. We also interviewed the assistant superintendent to gain a district-level perspective on this comparison. For the three continuing schools, researchers compared scores with corresponding ratings from the same three schools in the previous academic year (2011–2012) and included open-ended questions in the principal interviews to document their analysis of ILT implementation status.
Analysis Process for ILT Video Episodes

To further triangulate and strengthen reliability of these analyses, two members of the research team reviewed all 10 ILT videos (two from each school) and used a slightly modified version of the ILT rubric to independently assign ratings for each video episode across the four ILT dimensions. The videos enabled researchers to look for major examples of agreement or discrepancy with the global ratings, and follow up with the coach, principal, and focus groups to probe for additional explanation or detail. Researchers compared scores to check for agreement, established a consensus rating where scores differed, and repeated this process for all 10 video episodes. Overall inter-rater agreement for exact agreements again equaled 93% (37 divided by 40 multiplied by 100) and exact plus adjacent agreements equaled 100%. To assign a final score for ratings that differed, researchers discussed rationale and established a consensus rating, erring on the side of the lower score.

Analysis Process for Focus Groups and Interviews

For each of the 21 focus groups and interviews, a member of the research team listened to the full audio recording, reviewed field notes from the event, and studied and coded the transcript. After completing the first several transcripts, the researcher established a coding scheme to track and highlight emerging themes and patterns using a Web-based document management system. Appendix B provides a list of codes and illustrates the transcription coding process. After assigning the appropriate code to a given segment of text, the researcher added comments in the margin and then copied and pasted a hyperlink of that excerpt into a master spreadsheet organized with coding categories listed as column headings and all schools and transcripts listed by rows. The researcher also marked particular hyperlinks that represented uniquely illustrative excerpts for a corresponding category or theme. The final spreadsheet included 328 coded hyperlinks, allowing for convenient analysis of patterns across transcripts. The researcher used this spreadsheet to write a draft summary of major findings for each school and a draft summary of major findings for the two subgroups: first-year and continuing schools.

Analysis Process for Coach’s Spreadsheet Log

From September through June, the coach kept a detailed log of all hours spent on preparation and delivery of support services for PPMs and ILT meetings at each of the five schools. At the conclusion of the school year, the research team created a summary spreadsheet for hours logged
and compared these totals to the original projected hours and design constraints to determine whether the virtual support services were as cost-effective as hypothesized. The research team also conducted phone interviews with the coach to explore additional questions that emerged from analysis of the logs and to confirm or invalidate prominent patterns and findings.

RESULTS

RQ1

To what extent do virtually supported leadership teams demonstrate fidelity of implementation of the GR instructional improvement model comparable to that of a traditional face-to-face implementation?

Finding 1

Compared to previous first-year Treston schools in 2010–2011 receiving standard face-to-face services, the two first-year pilot schools receiving virtual coaching through the blended model demonstrated slightly higher overall ILT implementation ratings. As shown in Table 2, midyear ratings were similar to the comparison group with lower scores for debrief but higher scores in the stability and study dimensions. End-of-year ratings were the same or higher than the comparison average across all dimensions, with the most noticeable increase across the year in the level of principal engagement for the debrief segment of meetings. Ratings by the research team for corresponding midyear and end-of-year video episodes were equally strong and noticeably higher for the plan dimension.

During the interview with the assistant superintendent, when asked about the comparison between 2010–2011 and 2012–2013 first-year schools, she used similar language to characterize the implementation:

I was pleasantly surprised to see how especially our new schools really took to [the virtual support]. . . . In my observations I’d say they would be a little ahead of those schools. . . . But I would say most definitely they’re not behind. No, they would be equal or maybe slightly in front of. (Treston Schools assistant superintendent interview)

These district-level observations were consistent with findings from ILT global ratings and researcher-scored video episodes, providing three sources of evidence that ILTs at both new schools were generally functioning well with virtual support and implementing at comparable levels to previous first-year schools.
Table 2. Instructional Leadership Team (ILT) Ratings for Treston Pilot Schools with Virtual Coaching Support

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</thead>
<tbody>
<tr>
<td>Kite Elementary</td>
<td>2.88</td>
<td>2.50</td>
<td>2.25</td>
<td>3.00</td>
<td>2.50</td>
<td>2.72</td>
<td>2.75</td>
<td>3.00</td>
</tr>
<tr>
<td>East Elementary</td>
<td>3.00</td>
<td>2.25</td>
<td>3.00</td>
<td>2.50</td>
<td>2.50</td>
<td>3.00</td>
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<tr>
<td>Sun Middle</td>
<td>3.00</td>
<td>2.00</td>
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<td>3.00</td>
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<tr>
<td>Rise Middle</td>
<td>3.00</td>
<td>2.00</td>
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</table>
Table 2. Instructional Leadership Team (ILT) Ratings for Treston Pilot Schools with Virtual Coaching Support (continued)

<table>
<thead>
<tr>
<th>Schools</th>
<th>End-of-Year ILT Global Rating (Coach &amp; Researcher Consensus Scores)</th>
<th>End-of-Year ILT Video Episode (Research Team Consensus Scores)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous 1st-year Treston schools avg. (2010–11)</td>
<td>2.50</td>
<td>3.00</td>
</tr>
<tr>
<td>First-year schools avg. (2012–13 virtual pilot)</td>
<td>3.00</td>
<td>4.00</td>
</tr>
<tr>
<td>Kite Elementary</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Dawn Elementary</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Continuing schools previous year avg. (2011–12)</td>
<td>3.00</td>
<td>4.00</td>
</tr>
<tr>
<td>Continuing schools avg. (2012–13 virtual pilot)</td>
<td>2.67</td>
<td>4.00</td>
</tr>
<tr>
<td>East Elementary</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Sun Middle</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Rise Middle</td>
<td>3</td>
<td>4</td>
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</table>

Note. Midyear global ratings were based on patterns observed during the monthly ILT setting from September to January (five total meetings at each school). End-of-year ratings represent 10 ILT settings from September to June. Video ratings were based on single ILT episodes in winter and spring.
Finding 2

Compared to their own ILT ratings one year earlier (2011–2012), the three continuing schools showed steady progress in overall quality of implementation while transitioning to virtual support services (see Table 2). All scores and dimensions for both rating periods were the same or higher than the previous year with the exception of a lower end-of-year rating for stability at East Elementary. (This was due to a recurring schedule conflict for the kindergarten facilitator that was approved in advance. The principal agreed to meet separately with this facilitator to cover ILT meeting content.) Scores showed the most noticeable increase for the plan segment of meetings and specifically with the public sharing of agendas through electronic distribution, confirmed by evidence from coach’s logs, meeting records, and ILT correspondence. This was partially an artifact of the virtual support format since electronic distribution was not emphasized in previous years with the traditional face-to-face model. Ratings by the research team for corresponding midyear and end-of-year video episodes were equally strong, reflecting only minor patterns of variation from the global ratings.

As represented in Table 3, qualitative analyses from principal interviews at the continuing schools offer a similar characterization of the modest growth pattern for ILTs, including more advanced content, deeper thinking, and application of the instructional improvement process, as well as more intentional planning and electronic distribution of meeting agendas. Along with the global ratings and video episodes, these excerpts suggest ILTs at all three continuing schools were generally thriving with virtual support and steadily progressing with implementation in comparison to previous years.

Table 3. Principal Descriptions of ILTs at Three Continuing Schools

<table>
<thead>
<tr>
<th>Participant Title</th>
<th>Interview Excerpt</th>
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<tr>
<td>East Elementary</td>
<td>P: We have three parts to the ILT and that’s training, debrief, and agenda planning. In the past two years, the training has really been Amber training the process... This year it’s about the quality of work in each step and helping the facilitators engage with what does that mean. So yesterday, at the ILT, they were engaging in the process of analysis for [lesson planning] with some specific look-fors. That engagement was at the highest level that I’ve seen it.</td>
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<tr>
<td>Principal</td>
<td>P: The agendas... That is new and that is an effort towards transparency and an effort towards seeing what other people are doing in their teams and it was not a conscious level of the ILT, that’s where we’re going to build that authenticity of exchange of information or exchange of tips.</td>
</tr>
<tr>
<td>Participant Title</td>
<td>Interview Excerpt</td>
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<tr>
<td>Sun Middle Principal</td>
<td>P: I mean, because the difference that I see is that my facilitator’s capacity is increasing as well as the instructional capacity building-wide, which is enabling us to go deeper. . . . P: You look at where we were and now you look at where we are now, where you look at the richness of dialogue that’s happening . . . it’s a completely different place and it’s because we had a structure and a vocabulary to talk about instruction, and it shaped where we’re going to go.</td>
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<tr>
<td>Rise Middle Principal</td>
<td>P: Usually I’m the one who sets the stage and goes over the agenda and reminds teachers about their agenda planning time. And myself and my assistant principal walk around to see if there’s questions—what are they doing, kind of monitor if there’s anything that we think that they should add or those kind of things—during those first 20 minutes. And I usually facilitate the debrief. . . . And then usually, at that point, [the coach] might ask some probing questions and follow-up questions because, especially now, she’s not been in the [workgroup] meetings. . . . And then it’s been even more important for them to send the agendas. Every time they send out an agenda to their team, they cc her so she can see what the agendas are looking like. And then after we’ve done the debrief, we shift to the training piece and she really leads the training—or we co-lead, but more often she’s leading the training piece.</td>
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RQ2

*What specific implementation strengths and challenges emerge that are unique to the virtual assistance framework?*

*Finding 1*

The virtual assistance format proved to be highly conducive for one-on-one principal planning meetings. Both the coach and all five principals reported that the technology functioned as a more than adequate substitute for face-to-face communication in this context with no disruption to meeting objectives or discernible loss in productivity. All five principals used the bidirectional video streaming as part of Adobe Connect Pro and accessed audio by telephone or through the computer-aided microphone and speakers. The coach used the screen-sharing functionality to display documents, slide presentations, and Internet content, and the principals viewed the content on their office computers or by using a multimedia projector. Several principals described the virtual format as an enhancement for this setting, enabling more convenient access to electronic files, research articles, calendars, and other information that
could readily be exchanged and viewed without disrupting the flow of conversation. The Dawn Elementary principal explained,

So the principal planning meetings . . . on the phone and on the computer . . . that works really well . . . sometimes if one person has to travel to go to a meeting you’re like oh man, I don’t have that with me, but she’s in her office and I’m in mine so we can grab whatever, anything that we can think of, we can pull up right then. (Dawn Elementary principal interview)

Two principals also commented on the flexibility of the virtual meetings, which allowed them to conveniently reschedule as needed or conduct meetings from home outside of normal school hours.

Finding 2

The virtual coaching format served as a catalyst to expand principals’ leadership role in the ILT and accelerate principals’ growth and ownership of the instructional improvement process. This was a prominent theme across all five principal interviews and ILT observations, as well as follow-up discussions with the coach and interviews with the assistant superintendent. Specifically, participants described how the coach’s physical absence in the ILT necessitated a substantial shift in the principal’s role. The coach was still virtually present, providing assistance, teaching, and support through the software interface, but the principal could no longer defer to the coach as the lead facilitator for the meeting, and ILT members looked to the principal to meet that need (see assistant superintendent comments in Table 4).

As observed in videos and documented in the coach’s field notes, principals’ new responsibilities included preparing the setting, reading the room, checking for understanding, attending to nonverbal cues, facilitating discussion, charting ideas, and playing a more active role in each segment of the ILT. These expanded responsibilities created for principals a sense of urgency for growth and fostered even greater appreciation for the monthly PPM as a critical setting for ILT preparation, personal coaching, and professional learning.

The most significant example of this coaching and capacity building in the PPM emerged in the form of the “ILT dry-run”—a term that the coach and principals used throughout the interviews (see Table 4). During an early planning meeting in November, one of the first-year principals requested an additional virtual meeting with the coach to conduct a dry-run of the leadership team meeting and intentionally prepare for her role in that setting. The first dry-run was so impactful for the
principal that the coach began encouraging this approach as a standard routine for the other schools. As reflected in Table 4, all five principals responded favorably, openly acknowledging their need for more preparation and learning prior to the ILT. This evolved into an additional monthly setting and regular part of the virtual support routine from November to June.

It should be noted that facilitating growth in principal leadership capacity is one of the explicit goals described in the GR model research and a primary objective of the monthly PPM in the traditional face-to-face design (Goldenberg, 2004; McDougall et al., 2007). As such, it is likely that some of the growth observed and documented by the researchers resulted from the natural progression of the principal coaching process and was not unique to the virtual model. However, the distinctly new innovation of the ILT dry-run as part of the virtual support routine, the overall volume of evidence captured from multiple role groups, and the striking examples of growth from first-year principals suggest that these changes in principal capacity were uniquely accelerated by the virtual context.

Finding 3

Some teacher-workgroup facilitators (members of the ILT) reported a more regimented approach and loss of personal connection with the coach during ILT meetings. Several team members at two continuing schools, in particular, commented on the contrast from previous years where ILTs were highly interactive with more informal dialogue, charting on poster paper, and opportunities for brainstorming or feedback. One facilitator from the Sun Middle focus group explained, “I feel like the personal part of it’s kind of been removed. And now she’s just kind of the screen shot person. . . . It’s definitely taken the personal part out of it.” The following exchange from the Rise Middle focus group is another example:

T5: Which, again, I think kind of takes away from what we did have first year is we had like a—

T1: A sounding board.

T5: . . . Yeah, exactly, it was probably a lot more helpful; whereas, this is so much more regimented . . . (Rise Middle focus group)

Others reported a sense of distance in their relationship with the coach, including limited opportunities for small talk before or after meetings, no eye contact or ability to read nonverbal cues, minimal opportunities for private conferencing, and a general awkwardness with communication caused by the speakerphone or computer-aided audio system.
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<th>Participant Title</th>
<th>Interview Excerpt</th>
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| Treston Assistant Superintendent | R: So, when you think about a principal building their capacity and taking more ownership, do you think there’s a bigger effect of that outside of these specific settings? Or do you think it affects their leadership in the building in other ways?  
AS: Yeah, I do. I think that it gives them a sense of confidence. I mean, they started something brand new. And, yes, they have the support and it’s virtual. But their team is looking to them to be the experts. The level of conversation I’m hearing in our [Regional Administrator Meeting] from our brand new folks is much more specific, much higher than just cognitive thinking and really reaching out. I mean, I believe that the schools that were in it for a couple years, it took about a year and a half before I’m seeing the kind of level of conversation with our brand new folks. It was like from day one. So taking that ownership and that leadership, I think that it has helped them build that sense of confidence. . . .  
R: So for your principals with previous experience what differences, if any, have you noticed about their leadership and participation in the process this year compared to previous years? I know we’ve talked about this a little bit. We’ve talked more about the newer ones, so what about the ones that are . . . ?  
AS: The ones that are returning, there’s three of them. . . . So I really saw that, not only did they continue to grow, but it was that they knew that that was their coach and she could take them to the next level. The [one principal] I really do think [has] gotten a little bit more confidence and a little bit more ownership, and having to do the things, be a little bit more focused in the meetings because . . . your folks at the table are looking at you to be the leader. . . . So I think that the principal planning meetings have been much more specific and focused. And I know for that particular principal . . . that has truly been a growth. . . . |
| Dawn Elementary Principal | P: In the case of this last time, she also sent out the idea when you review this, we can do a dry-run, do you want to do that? So I looked at it and I said yeah, I want to, I can pull out some time Friday afternoon. So then we took about an hour Friday afternoon, dry-runned the agenda for the ILT last night and made a couple of changes. One was notably around how do we do the success criteria for the ILT members and how do we write that and what jives with what I’ve been doing, then she made modifications. Then I spent some time printing out any handouts that we’re going to use with the team, I spend time of the logistics of just getting that ready and getting that set up. So that’s pretty much the sequence of getting prepped for an ILT. It takes a considerable amount of time, I think, but it’s resulting in a really thoughtful process that’s really attached to the outcomes that we’re looking for. |
Table 4. Interview Descriptions of ILT Dry-Run and Expanded Principal Leadership Role (continued)

<table>
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<tr>
<th>Participant Title</th>
<th>Interview Excerpt</th>
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<tr>
<td>Kite Elementary Principal</td>
<td>P: I’m getting more involved in that piece than I was at the start because I was like a deer in the headlights. My point was, “And hereee’s Amber.” And that’s the advantage I think to the dry-run, too, is that comfort level and getting more involved. And then just my understanding of the process a little more. So it is, they’re starting to re-shift with me being more of the talker and her a little less. P: But much more efficient and as part of that dry-run when you have the questions that you practice, too, it felt very productive. And I don’t want to waste my ILT’s time—my facilitator’s time. So I did feel much more prepared with that.</td>
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<tr>
<td>East Elementary Principal</td>
<td>P: In the past two years, Amber did most of the work, in terms of bringing materials and doing the training and the debriefing and the leading. This year, knowing that it’s our third year and knowing that it is the expectation that the principals do step up and co-train or take the lead, the PPM has been very instrumental about where do we zero in on the training and then what do teachers need. P: . . . so we spend an hour together talking about what that PowerPoint should look like, then she thinks about it and puts some things together. Then we do a 30-minute dry-run.</td>
</tr>
<tr>
<td>Sun Middle Principal</td>
<td>P: . . . at the end there’s always this summary. “OK, so let’s remember, we’re going to do this and then we’re going to do this and then we’re going to do this and we’ve got to remember to hit on these key points.” And I usually build my ILTs around a PowerPoint because that helps me focus. . . . And we’re starting to really use the notes section in the PowerPoint to remember these are the key points that we want to hit or this—and this last one, I actually went through and said, “OK, in this discussion I want to make sure that we hit on these three points. I anticipate these misconceptions or I anticipate this being problematic and so we need to remember how to do that.” P: . . . I think that the other strength that I see is [the virtual format] created the conditions for me to take a stronger leadership role in the ILT. P: I am much more the facilitator of the meeting now, and that has been a transition. Originally when we started Amber was—OK, I was supposed to be running the meetings but, let’s be honest, it was Amber that was taking the lead on this because I just didn’t know what I was doing. And that has transitioned to a place where now I take the lead and, because Amber’s not in the room, it really forced me to take on that role. It would have been really easy to remain having Amber take the lead on this because she’s got the respect of the teachers, she’s got this deep knowledge of the process, she’s great with her presentations, but, because she’s not in the room, that’s not a possibility...</td>
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Table 4. Interview Descriptions of ILT Dry-Run and Expanded Principal Leadership Role (continued)

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<tr>
<th>Participant Title</th>
<th>Interview Excerpt</th>
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| Rise Middle Principal      | P: But what’s happened this year is, because Amber’s not present, I’ve facilitated more of the training, which I think she’s intentionally turned that over to me. I’m a little bit uneasy at times about like I’m not sure if I really know how I’m going to facilitate this. And even sometimes in the moment what we had planned, I then even adjust on the fly and she just rolls with it... So I think that is one adjustment that’s definitely happened in Year 3. Amber still facilitates, but I think I’ve been asked to step up more in terms of facilitating that actual professional development part.  
P: And what we started to do now—we have it scheduled this morning—is we do dry-runs. So we now do dry-runs for ILT usually the week of or a couple days before so we make sure that we’re all on the same page, especially if we’re doing something that we haven’t done before.  
R: And that leads into my next question, so great segue. How does that dry-run contribute to your leadership of the ILT?  
P: It’s like a pacifier; it helps me feel a lot more secure in terms of what we’re doing, especially if it’s something new. And so it helps me know where I’m going to step in, where I’m going to step back, all of those kinds of things in terms of facilitating the actual ILT piece. |
Facilitators consistently emphasized that these limitations did not inhibit the productivity or success of the ILT, but did leave some members feeling less validated and energized about the work.

The coach and principals recognized these limitations and changes in the tone of the setting and brainstormed ways to generate more personal interaction through the virtual interface. The primary adjustment they made was incorporating individual phone conferences into the planning segment of ILT meetings. The principal and coach inventoried specific facilitator needs and anticipated which individuals might benefit from more personalized assistance. During the planning segment of the ILT, as facilitators were working independently on their agendas, the coach would take turns calling on these individuals to pick up the phone receiver (disabling the speaker function) and engage with them privately around specific challenges or questions. Facilitators had a mixed response to this innovation. Some reported that it worked well and helped meet their personal need for feedback and clarification. Others reported they felt self-conscious and uncomfortable speaking on the phone in the middle of the room while colleagues pretended not to eavesdrop on the conversation. Principals noted that groups became more comfortable with this routine over time and felt that it satisfied some of the concerns, but several ILT members still voiced a need for more personal interaction with the coach.

Finding 4

The coach struggled to find sufficient touch points for engaging with facilitators and staying attuned to emerging needs and challenges of teacher workgroups. This was partially due to the loss of personal interaction in the ILT (described in the previous section), but was primarily a consequence of the pared down, economical design of the blended model, which focused exclusively on the PPM and ILT, eliminating the coach’s role in strategic workgroup visits traditionally included in face-to-face services. In previous years at Treston, the coach would select at least two workgroups per month at each participating school and sit in on meetings to listen and provide assistance while principals targeted different workgroups. This enabled the coach to build closer relationships with facilitators and gain a firsthand perspective on the needs and dynamics of various teams. In the virtual model, the principal and other administrators inherited full responsibility for these workgroup visits, while the ILT and two institutes became the coach’s only touch points with facilitators.
As a result, the coach relied heavily on her debrief with the principal in the monthly PPM to check on the status of each team, but she also experienced some limitations with this singular data point. Principals would sometimes overlook important details or privilege observations and information that reinforced their beliefs or expectations, and the coach would later hear less polished reports at the midyear institute or during an individual phone conference with a facilitator. Comments from a few focus group members at continuing schools reflected a similar concern, describing the absence of a teacher advocate in the process who helps the principal maintain this balanced perspective.

I think with Amber here, too, she was a different set of eyes and ears that’s not in the building. [P] sees everything that he wants to see . . . and he’s going to put everything together because he just sees this big whole picture, where Amber really just focused on the [inquiry process] and what was important. . . . And so when we said a concern, it clicked with her . . . and then I think she really does have his ear in a different way than we do . . . she has that voice that he’s going to hear that’s different from a teacher voice. (Rise Middle focus group)

Several other facilitators from continuing schools talked about missing the workgroup visits and recalled feeling a sense of support and validation when the coach had direct knowledge of their specific workgroup circumstances. They explained that virtual support was certainly “much better than no support” but would always prefer the face-to-face model if presented with both options.

The coach implemented several strategies to compensate for this loss of workgroup interaction, including requests for more detailed agendas as well as more frequent emails to facilitators with follow-up comments and questions. This provided her with a window into their workgroup plans and meeting content, but was not always well received or understood by facilitators. Some members viewed the requests and emails as “I’m in trouble” or “I’m not doing something right” and did not perceive these communications as a way to stay connected and receive support (Sun Middle focus group). Other members viewed them as helpful and appreciated the guidance and feedback: “I think it’s great, the support that I got in person is there . . . and she’s e-mailing, she’s easily accessible by e-mail for questions” (East Elementary focus group).
RQ3

What are some of the pivotal factors and suggestions for effective implementation of the blended model from the perspective of the study participants?

Finding 1

Pre-implementation site visits should include more thorough analysis and verification of phone or computer-aided audio solutions. While all five schools reported relatively few technological complications, sound quality was the one major challenge during the first ILT meetings at each site. ILT members could hear the coach easily but the coach had difficulty hearing the rest of the group. This became frustrating for participants who felt uneasy about yelling across the room, as reflected in the following exchange from East Elementary:

T2: For me, it impacts the length of my answer, I don’t want to shout for 15 minutes or if I do say something, and then she’s like, “Can’t hear you.” . . . I’ll edit what I repeat because I don’t want to go into depth again or I don’t remember exactly what I said.

T1: And there’s a little more having to identify who the speaker is each time for Amber’s benefit. (East Elementary focus group)

Whether using a high-quality speakerphone or computer-aided audio solution designed for Web-conferencing, participants discovered it was critical to test sound quality under authentic conditions of large group discussion and verify that sound was clear on both ends. They also found it was equally important to practice room configuration and phone placement, verify length of all electric and audio cords, and make sure all members in the room could view both the phone and screen while facing the same direction.

Finding 2

The first ILT at each school should begin with a training module on guidelines and procedures for productive virtual meetings. As noted in the comments below from the Dawn Elementary principal, the coach and nearly all participants agreed that a more intentional and formal training session was necessary so that that group members could relax with the new system and routines and shift their focus to the meeting content.
you have to build in a little extra time in the beginning to do that . . . to figure out what’s our basic setup and how’s it going to work for us . . . To know that part of the process is going to be learning how to help [the coach] facilitate the group, and bring up things so that [the coach] hears them and can ask the questions or help them with anything that they might miss . . . in how to keep the flow going. (Dawn Elementary principal interview)

Researchers recorded the following training topics and suggestions for the first ILT as they emerged from focus groups, interviews, and observations: learning to log-in and access the Web-based software; finalizing the room configuration and phone placement; adjusting laptop camera angles; practicing procedures for announcing who is speaking and learning to project voices with appropriate volume; learning procedures for individual phone chats during agenda planning; practicing use of interactive software features; and establishing expectations and procedures for Web-based sharing of work products and agendas.

Finding 3

The first PPM should include detailed training and a dry-run on effective practices for the principal in leading the virtual ILT. Building on the concept of the dry-run described in previous sections, the coach and principals agreed that a rehearsal of the first ILT was essential to clarify roles, walk through guidelines and procedures, anticipate questions and obstacles, and ensure a smooth start to the ILT’s first experience with the virtual interface. The assistant superintendent also emphasized this:

I know that we tested it out before but when it came down to people being in the room it sometimes didn’t work. And some of it was our own technology . . . But I would say that making sure that everybody knows what that is and having, “Here’s a best practice.” And working with the principals upfront—what are best practices about that—will help those meetings go much smoother. (Treston Schools assistant superintendent interview)

In addition, the coach communicated in both logs and interviews several other training priorities for successful principal leadership of ILTs and corresponding settings, ranging from interactive leadership skills, such as charting and reading nonverbal cues during ILT meetings, to specific tips on what to listen and look for during strategic workgroup visits.
Finding 4

The summer and midyear face-to-face institutes were critical relationship-building opportunities that enabled more meaningful and authentic interactions in the subsequent virtual settings. During the summer institute, all facilitators and principals from the Treston participating schools met for two days to receive training and support to launch work for the upcoming academic year. The veteran facilitators received training from Amber (the certified coach assigned to Treston) while the first-year facilitators received training from another certified coach assisting with the event. During the midyear institute, the event was divided into separate dates for middle and secondary schools, enabling Amber to work directly with all participants. Those facilitators who, during the summer event, did not have extended time with Amber commented on how much more meaningful and connected the virtual support felt in the second half of the year as a result of having a direct face-to-face experience to build mutual trust and solidify the relationship. The focus group excerpt below captures these sentiments from the facilitators at Kite Elementary.

T: We were saying too that it seems like . . . it’s more comfortable now that we had that follow-up institute and we met her in person.

R: Yeah, because you hadn’t met her before, right?

T: We’d never met her.

T: And really, the ILT right after that, I’m like, “That was so much, like, better.” It was more comfortable just having had that face time with her. It made a huge difference . . .

T: Yeah, so it was a new process and new person and the awkwardness of yelling into the phone to someone that you don’t [know], and they think you’re a weirdo. (Kite Elementary focus group)

The participants emphasized that the summer institute should follow a similar structure, enabling all participants to begin the year in a direct face-to-face setting with their assigned coach.

RQ4

To what extent were virtual coaching services provided within the design constraints of the blended model (projected hours for preparation and delivery of PPM and ILT)?
Table 5 presents a breakdown of the average hours per month of virtual coaching services at each school as recorded by the coach from September to June. The hours are separated into two categories: overall time spent in preparation and overall time spent in delivery of services for the PPM and ILT. The table also provides a comparison between the total average hours per month across all schools and the average projected hours per month predetermined as part of design constraints to test the hypothesized cost savings associated with the blended model.

The record of hours shows that the coach was able to stay well within these projected guidelines while providing virtual services to the five Treston schools. The total average per month for actual preparation (1.91 hours) was less than half of the projected average (4.00 hours) and the total average per month for actual delivery of the PPM and ILT (3.95) was nearly the same as the projected average (4.00). The overall total average for assistance services across the five schools (5.86 hours) required approximately two hours less per month on average than the total projected average (8.00) outlined in the design constraints for the blended model. There was no significant variation in the distribution of hours across the five schools.

These totals included the addition of the ILT dry-run, initiated in November as part of the regular virtual support routine. Since travel was no longer a project constraint, the coach was able to flexibly accommodate this adjustment by reducing the length of the regular monthly PPM and freeing up time for the separate dry-run session without increasing the total allotment of coaching hours.

We also analyzed the distribution of virtual coaching services spread out over each month of the academic year. Predictably, the hours for preparation and delivery were noticeably higher during the first month of implementation, nearly one hour more than the monthly average in
both categories of service. From October to June, the distribution settled into a stable pattern with minimal fluctuation and only a slight dip in hours for both the middle and end of the year.

DISCUSSION

In this study we investigated the use of virtual coaching as an alternative method for ongoing external assistance to instructional leaders. Our principal goal was to test whether a blended model of support could demonstrate fidelity of implementation for leadership settings comparable to a research-tested face-to-face model of support services. We also wanted to better understand the specific strengths, challenges, and pivotal factors that characterized implementation of this virtual assistance.

Several interesting findings emerged. Evidence from both rubric ratings and qualitative analyses suggests that the blended model served as an adequate and cost-effective substitute for supporting principals and leadership teams at the five Treston schools. These findings applied to both continuing schools with a prior history of face-to-face assistance, as well as first-year implementing schools. Through interviews, focus groups, and video recordings of leadership settings, we discovered that the virtual coaching format was particularly effective for conducting one-on-one planning meetings with principals and served as a catalyst to expand principals’ growth and ownership of the instructional improvement process. We also documented some challenges participants reported, including the lack of personal connection with the coach during ILT meetings and insufficient touch points for the coach to stay attuned to the needs of teacher workgroups. Participant suggestions for future implementation focused on more thorough pre-implementation site visits, dedicated training modules on productive virtual meetings, and opportunities to build face-to-face relationships prior to launching virtual assistance.

LIMITATIONS

As with all case-study research, these findings are bounded by the specific context of the study population (Merriam, 1998). The results provide rich description of the blended model implementation at five purposefully selected Treston schools but are not predictive of future outcomes with other schools or districts. Among the study limitations, one obvious issue is that the findings only describe the implementation experience of elementary and middle schools. We know from research and direct experience with other projects that implementation at high schools involves an additional layer of complexity and challenge.
Another important limitation was the coach’s extensive prior experience and close relationships with Treston schools. It is plausible that participants at continuing schools would have responded less favorably to the virtual implementation if supported by a coach without this history of local knowledge and personal connections. It is also plausible that the first-year schools uniquely benefited from the prior experience of the district and coach, giving them a head start on implementation when compared to first-year Treston schools in previous years. Future replication studies should explore these and other variables across a wider range of implementation contexts.

A third limitation of the study is the narrow focus on proximal outcomes of implementation fidelity. This liability was clear at the outset. Researchers operated under the tentative assumption that if the most proximal measures of implementation quality (stability and productivity of ILT) were comparable to previous measures of implementation with face-to-face services, then one might also expect comparable results in subsequent distal outcomes (productivity of teacher workgroups, improvements in classroom teaching, and increased student learning) as previously established with the original face-to-face design. These assumptions require further investigation to experimentally verify the distal links in the chain of effect.

IMPLICATIONS

In this final section we explore the study findings as they relate to three main categories of application to research and policy: (1) general implications for maximizing limited fiscal resources; (2) specific implications for external assistance of school reform; and (3) specific implications for the use of emerging technologies to support professional learning and school improvement initiatives.

Maximizing Limited Fiscal Resources

The study findings suggest that blended or virtual models are worth consideration as one potential solution for maintaining school support in the midst of diminishing federal, state, and district resources. Circumstances will vary depending on the level of experience, severity of need, and type of services being provided, but the example reported here showed substantial reduction in costs related to time spent on preparation and delivery of services. Overall, the average hours logged for monthly advisor services were approximately two hours less than projected for virtual support (see RQ4), suggesting that the model might allow for even more savings than the 50% reduction estimated during initial design
and planning meetings with district leadership. For projects where air travel is required, the savings would increase exponentially for airfare, lodging, meals, and other related costs. These efficiencies can translate into greater distribution of limited resources and expertise across a wider number of schools, or enable some funds to be repurposed for other critical priorities. Additional research is needed to conduct a more granular analysis of these potential cost savings and compare results with other implementation contexts.

We suggest this possibility of “more cost-effective external assistance” with the important caveat that the choice to adopt a virtual delivery method should also be preceded by careful analysis of baseline readiness conditions, especially the readiness of principals and other school leaders who will be the primary recipients of virtual support. The researchers have collected relevant data from other virtually supported schools not included in this study, which suggest that a principal who is hesitant or unwilling to accept help from outside partners will struggle to succeed in any context, but may struggle even more within the context of a virtual coaching format. Along with the established readiness dimensions described in the method section, we would add to this list a pre-implementation assessment of the school leader’s willingness and capacity to work with technology and reliably maintain communication.

In addition to general school and leadership readiness, an equally important aspect of readiness conditions (as noted in RQ3, Finding 1) is the verification of technological capacity during a pre-implementation site visit. Participants in this study recommended a dry-run to verify sound quality, length of cords, room configurations, and other details prior to the first virtual meeting.

If the above conditions are satisfied, a school might be a candidate for virtual support, particularly for one-on-one planning or coaching sessions where we observed few obstacles and even some distinct advantages over face-to-face settings such as flexibility in scheduling and immediate access to electronic resources. Other settings, such as leadership teams, involve additional challenges related to maintaining adequate interpersonal interaction, but may still warrant consideration if sufficient strategies are in place to mitigate these limitations.

External Assistance for School Reform

The results of this study offer insightful contributions for research and policy on effective practices of external assistance, specifically as it relates to intensity of assistance, capacity building of principals, and quality of coaching expertise. The findings are applicable for assistance providers
and coaches at the district and state level, as well as other organizations or intermediaries providing external expertise and assistance for schools. First of all, the study builds on and extends findings from previous research indicating that external assistance must be of high intensity to build educator and organizational capacity (Finnigan et al., 2009; Supovitz & Turner, 2000). These studies and others typically define intensity as the quantity of technical assistance days spent in the school. Finnigan et al. (2009), for example, describes unsuccessful projects where external providers, constrained by busy schedules and travel limitations, would typically deliver their allotted time to each school in full-day increments, focusing on a variety of tasks including observations, feedback sessions, and distribution of instructional materials all on the same day.

This study offers a new perspective and definition of intensity as it applies to external assistance. The evidence from the PPMs suggests that not only the volume of hours invested, but more importantly, the strategic and purposeful distribution of those hours determined the intensity of support. A few hours of technical assistance carefully distributed in smaller increments (PPMs and ILT dry-runs) across several weeks proved to yield a significant impact on principals’ capacity to effectively lead ILTs. The virtual format was the catalyst for this innovation, enabling the coach to flexibly adapt monthly PPMs and establish a new routine of two shorter meetings without any implications for time or travel. We believe the same approach could be utilized in a variety of external assistance contexts, leveraging the benefits of virtual coaching models to increase the number of touch points and feedback loops that are possible in a monthly assistance cycle while also alleviating some of the pervasive constraints of the coach’s travel and scheduling that are counterproductive for schools.

The study findings also provide new insights related to research and practice around capacity building for school leaders. The presumed goal of external assistance is not only to provide expertise and resources to schools beyond what they can provide for themselves, but also to increase the capacity of personnel to carry on productive work during and beyond the period of intensive support. More often than not, this has proven difficult to accomplish. Even in cases where assistance programs are successful, the majority are not sustained and few schools or districts are able to institutionalize reform (Datnow & Stringfield, 2000; Fullan, 2009). Goldenberg (2004), for example, describes a successful university–school partnership that helped a struggling school and principal in an underprivileged community move from lowest performing to highest performing in the district over a period of six years. The last chapter in
the book, however, provides a sobering account titled “Freeman fizzle” describing how fragile successful change can be without an appreciation for how to keep it alive.

While it is still not clear whether the capacity-building efforts taking place in Treston will have a lasting impact on the principals and schools if and when the assistance is removed, the preliminary findings regarding expanded principal leadership roles in the context of virtual support (RQ2, Finding 2) introduce some intriguing possibilities and potential benefits. The assistant superintendent, coach, and principals articulated that the virtual coaching format served as a catalyst to accelerate principal growth and capacity for leadership of the ILT, primarily because they could no longer defer to the coach and take a back seat in the process. As one principal commented, “It would have been really easy to remain having Amber take the lead on this because she’s got the respect of the teachers, but, because she’s not in the room, that’s not a possibility . . .” (Sun Middle principal interview). Perhaps this is one reason why previous capacity-building efforts have often failed. Principals have not had sufficient opportunity to learn new responsibilities, gradually transitioning to the “driver seat” with a mentor on standby who is ready to assist and steady the wheel.

Research indicates that unless combined with other systemic efforts to institutionalize reforms, it is unlikely that this kind of capacity building alone will have a lasting effect on school change (Fullan, 2009; Mayer et al., 2013). Nonetheless, capacity building is one critical aspect of the larger solution and the unique structure of the virtual model may offer some unexpected advantages for supporting leadership development. At minimum, we believe it is worth exploring as a gradual-release strategy for schools demonstrating multiple years of consistent implementation and improvement.

A third implication for external assistance relates to the challenge of ensuring high-quality expertise. Previous studies of both the Saunders et al. (2009) GR model and other assistance programs point to the importance of combining a well-specified framework with skilled coaches who can flexibly tailor and adapt the framework to local circumstances and needs, making nuanced adjustments that are critical to building coherence and getting results (Mayer et al., 2013). External coaches with these qualifications are in limited supply and the challenge is even greater when the project requires hiring and placing coaches within specific geographical boundaries (Finnigan et al., 2009; Israel et al., 2013). This can restrict the pool of candidates significantly and contribute to a problem we have observed in many isolated regions of the United States, where a small contingent of under-qualified local consultants perpetually rotate
through the system working as independent contractors for different reform organizations.

The virtual model expands the flexibility of how personnel are selected and deployed, increasing the possibility of access to high-quality experts regardless of geographic location. At the time of this writing, for example, the certified coach working with the Treston schools (Amber) launched a new assistance relationship with several schools in another state. Rather than relying on an inexperienced new hire in the local area, which is often necessary with a face-to-face coaching design, the school leaders are immediately benefiting from her advanced knowledge and experience with the GR model. Additional studies and projects might continue to explore whether high-quality expertise through a virtual format might produce better results than face-to-face services from a less qualified provider.

**Technology-Supported Professional Learning**

The findings also have implications for research and policy on the use of emerging technologies to support professional learning and school improvement. In the findings section (RQ3, Findings 1–4), we highlighted specific suggestions from the study participants for future consideration of virtual implementation projects. We now expand this discussion to focus on two broader implications: aligning technology solutions with different types of educational contexts, and increasing the naturalness of human interaction within a virtual assistance framework.

This study is one of the first that we know of to investigate the use of technology-facilitated assistance for a sustained school improvement initiative. As such, it also introduces some useful distinctions between sustained external assistance services delivered to co-located school-based teams, and other types of technology-enabled professional learning such as virtual coaching engagements with individual teachers, or virtual professional development (PD) delivered to groups or communities working across schools in different geographic areas. Each context has a different audience and different set of goals that influences the way technology might be used to support learning and work.

For example, when delivering PD in single or multiple episodes to a mixed community of educators across diverse geographic regions, the primary goals might be facilitating learning and building a network of relationships. These goals might be supported through a Web-based solution where all members individually access a portal to participate in training content, join discussion forums, complete training exercises, and collaborate with colleagues across geographic boundaries. When
mentoring individual teachers, the goal might be to facilitate critical changes in practice through personalized cycles of reflection and feedback that could be accomplished through remote classroom observations and virtual bug-in-ear technologies, followed by individual reflections sessions via videoconferencing (Israel et al., 2013).

By contrast, when providing sustained coaching services for a co-located team implementing a site-based improvement initiative, the primary goals are to build capacity and help team members adapt and apply processes to solve specific problems for a shared local context. These goals might be addressed through a hybrid meeting design (like the study described here) where the virtual coaching format provides the team with access to new expertise and resources, but the face-to-face component for local members enables the principal to maintain a strong physical presence and leadership role. This design allows the group to simultaneously leverage the benefits of virtual coaching as well as the face-to-face context they conveniently share.

This is not to say that a co-located team could not benefit from the selected use of other virtual formats where individual members log on from their own personal computer at home or in the classroom, but it does draw attention to the important choices involved when aligning technology solutions with the specific goals and contexts of different participant groups. We believe these distinctions could also help classify the research literature and guide the design of future studies or innovation projects.

One final technology-related implication is the challenge of increasing personal connections and the naturalness of interaction within a virtual assistance framework. Two of the more prominent obstacles reported in this study were the truncated personal interactions between coach and facilitators and the coach’s shortage of touch points for staying attuned to needs of teacher workgroups. While neither of these limitations prevented the leadership teams from accomplishing goals or productively completing work during the immediate timeframe of the study, the regimented tone and decreased energy level reported by participants (and observed in ILT videos) are important warning signs that we believe could eventually lead to fading interest, decreased commitment, and diminished quality of implementation over time. Kock (2005) explains the psychology behind this concern, describing the importance of maximizing media naturalness. He indicates that “a decrease in the degree of naturalness of a communication medium leads to the following effects in connection with a communication interaction: (1) an increase in cognitive effort, (2) an increase in communication ambiguity, and (3) a decrease in physiological arousal” (p. 124).
The coach and principals worked to adapt and incorporate some additional solutions such as switching off the speakerphone to use the phone line for individual conferences, and placing heightened emphasis on electronic distribution of meeting agendas and work products. These solutions improved the coach’s access to information for each team but were not always perceived by facilitators as natural interactions that enhanced their sense of connection or validation.

Future projects will need to incorporate a broader range of strategies for virtual interaction, some of which are readily available but were under-utilized in the current design. One option would be to explore ways of using video chats on mobile devices for individual conferences during ILT meetings, instead of having team members use the central phone line. Another option to consider would be experimenting with a few virtual workgroup visits each year using the same technology interface as the ILT, allowing the coach to strategically join selected meetings like the original face-to-face design. One virtual workgroup visit per school per month would not require a substantial increase in cost or time.

With exciting advances in technology, other options will undoubtedly emerge that could dramatically enhance the naturalness of interactions and frequency of touch points between coaches and school personnel. Investigating ways to strengthen these virtual connections will be a key priority, enabling coaches to more fully engage and facilitate change with each role group in the school community and helping members work together toward collective improvement goals.
REFERENCES


Mayer, A., Grenier, R., Warhol, L., & Donaldson, M. (2013). Making a change: The role of


## Instructional Leadership Team (ILT) Global Ratings Rubric

<table>
<thead>
<tr>
<th>A. The Stability of the ILT Setting</th>
<th>Level 0: Not Functioning</th>
<th>Level 1: Functioning, with Some Limitations</th>
<th>Level 2: Functioning</th>
<th>Level 3: Functioning Well</th>
<th>Level 4: Thriving</th>
</tr>
</thead>
<tbody>
<tr>
<td>ILT is not meeting at all. Or, less than half of the scheduled monthly ILT meetings actually take place.</td>
<td>ILT is scheduled for and/or only meets 50%–75% of the months of the school year. Or, ILT regularly meets for less than 90 minutes (typically 60).* Attendance is not “nearly 100%” (all facilitators and the Administrator) at all meetings.*</td>
<td>ILT is scheduled for and meets at least 80% of the months to date (ex: 8 of 10 possible meetings) for 90 minutes. Virtually all meetings spend the entire 90 minutes focused on protocol and implementation and topics relevant to implementation. Attendance is nearly 100% (all facilitators and the Administrator) at all meetings.</td>
<td>ILT is scheduled for and meets 100% of the time (ex: 10 of 10 possible school year months) for at least 90 minutes. Virtually all meetings spend the entire time focused on protocol and implementation and topics relevant to implementation. Attendance is nearly 100% (all facilitators and the Administrator) at all meetings.</td>
<td>ILT is scheduled for and meets 100% of the time (ex: 10 of 10 possible school year months) for at least 90 minutes. At least one meeting has extended up to or beyond two hours in order to complete specific and targeted tasks that focus on protocol and implementation and topics relevant to implementation. Attendance is nearly 100% (all facilitators and the Administrator) at all meetings.</td>
<td></td>
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</table>

| B. Debriefing Workgroup Meetings | Debriefing workgroup meetings occurs in 50% to 80% of the ILTs, and/or debriefing is facilitated by the Coach without participation from the Administrator. | Debriefing occurs at virtually all meetings, is facilitated by the Coach and/or Administrator (admin participates at a minimum), and includes an update on workgroup progress from each facilitator. | Debriefing occurs at virtually all meetings, is jointly facilitated by the Coach and Administrator or individually/independently by Admin, and includes detailed but succinct accounts by each facilitator about the current work and accomplishments of their workgroup. | Debriefing occurs at virtually all meetings, is facilitated by the Coach and Administrator or individually/independently by Admin, and includes detailed but succinct accounts by each facilitator about the current work and accomplishments of their workgroup. |

**Note:** Debriefing often varies in its structure and format so as to avoid routinization over time.
### Instructional Leadership Team (ILT) Global Ratings Rubric (continued)

<table>
<thead>
<tr>
<th>Level 0: Not Functioning</th>
<th>Level 1: Functioning, with Some Limitations</th>
<th>Level 2: Functioning</th>
<th>Level 3: Functioning Well</th>
<th>Level 4: Thriving</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. Studying the Inquiry Protocol and Facilitation</td>
<td>Studying the inquiry protocol, related content, and/or facilitation occurs in 50% to 80% of the ILTs, and/or it is regularly cut short due to time constraints or other conflicts.</td>
<td>Studying the inquiry protocol, related content, and/or facilitation occurs at virtually all meetings and is provided by the Coach.</td>
<td>Studying the inquiry protocol, related content, and/or facilitation occurs at virtually all meetings, is provided by the Coach, and is targeted to specific facilitator needs identified by the Coach and the Administrator (and perhaps facilitators).</td>
<td>Studying the inquiry protocol, related content, and/or facilitation occurs at virtually all meetings, is provided by the Coach, and includes modules or mini-lessons targeted to advanced needs of the facilitators and the school, as identified by the Coach and the Administrator (and perhaps facilitators).</td>
</tr>
<tr>
<td>D. Planning Workgroup Meetings</td>
<td>Planning subsequent workgroup meetings occurs in 50%-80% of the ILTs, and/or it is regularly cut short due to time constraints or other conflicts.</td>
<td>Planning subsequent workgroup meetings occurs in virtually all meetings and is assisted by at least the Coach.</td>
<td>Planning subsequent workgroup meetings occurs in virtually all meetings, is assisted by both the Coach and the Administrator, and results in draft agendas for subsequent workgroup meetings.</td>
<td>Planning subsequent workgroup meetings occur in virtually all meetings, is assisted by both the Coach and the Administrator, and results in draft agendas for subsequent workgroup meetings, which are shared before the ILT adjourns or circulated electronically.</td>
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*Note for “A” dimension. We are assuming that per model design, ILTs meet at least once per month for at least 90 minutes per meeting. For attendance, “nearly” is defined as a maximum of one absence per facilitator across the entire year as verified by ILT attendance records.

**Note for “B” dimension. Examples of varied debrief segments include (1) debrief is framed around reviewing and discussing charts or work products (e.g., lesson plan charts), and (2) ILTs complete their planning first and the debrief last, with the debrief including what they did in their last meetings and what they will do in their upcoming meetings.
APPENDIX B

Sample Transcript Coding

Note. Codes are as follows: Technology Challenges = TC (Sound = TCs; Connection = TCc; Visual = TCv; Cumbersome Features = TCcf; Placement = TCp); Adaptations = A (Meeting Location = Aml; Speakerphone = Asp; Individual Laptops = Ail; Individual Phone Chats = Apc; PPT Backup = Appt; Electronic Agenda Distribution = Aad; Speak Loudly = Asl); Lost Productivity = ALP; Virtual Advantages = VA (Flexible Scheduling = VAfs; Remote Attendance = VARa; Resource Access = VARa); Increased Principal Capacity = IPC; Increased Facilitator Capacity = IFC; Interactive Limitations = IL; Need Workgroup Interaction = NWI; Email Feedback = EF; Loss of Teacher Advocate = LTA; Suggestions = S (Face-to-Face Institute = Sf2fi; Virtual Training = Svt).

Interview question: What obstacles, if any, have you encountered specifically related to virtual support, technology, or logistics?

Well, so the first ILT comes up and we couldn’t get the sound to work (TCs) and Laura’s up on the screen and she can’t hear us and we can hear her (TCs), and we spent so much time trying to get the tech piece working even though I thought I had it working before the meeting even started . . . but after that we started to isolate what the problems were (A). We moved the location (Aml), we’re working on setting up a speakerphone situation (Asp), so we were able to overcome some of those technical obstacles (A). The one technical obstacle that we don’t seem to be—we haven’t yet solved is that interactive piece so, you know, it’s very difficult to have the same level of interaction between Laura and the other LT facilitators when she’s in that virtual capacity (IL) because she might not hear (TCs), but you also have difficulty with seeing because there’s the nuances of expression (TCv) and then there’s the interaction that had occurred between me and Laura where I could look at Laura, I’d get a sense of what she was thinking and we could have a little quick side conversation to adjust where we were going in ILT. Those little nuances are gone (IL). And part of me says that’s a bad thing because I really depended on and appreciated that collaboration and that feedback. Yet, at the same time, it is also better because I think I’m taking a greater level of ownership of the process (IPC). It’s very, I think especially the first year, it was very easy to kind of hand things over and let Laura step in more frequently because she had the greater depth of knowledge about [the process] and now, however, as I’ve increased my depth of knowledge . . . I feel more comfortable taking over that primary role (IPC), yet I miss the interaction (IL).
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TIMOTHY T. TATSUI is Vice President of Pearson School Efficacy Implementation and an affiliate member of the Research and Innovation Network. His current research interests include the application and study of implementation science, developmental evaluation, intervention fidelity, complexity theory, logic modeling, and systems thinking in schools and school systems in North America.

KELLY R. YOUNG is an Educational Specialist for Pearson School Services and an affiliate member of the Research and Innovation Network. Her current research focuses on the principal’s role in changing school culture and factors that affect teacher willingness to adopt new instructional practices.