

ROLL CALL IN DATA TEAM MEETINGS: ARE PRINCIPALS PRESENT?

With the proliferation of information on how to use data to inform instruction for more than two decades, district leaders, principals, and other stakeholders assume teachers know how to use the cycle of inquiry process to improve student achievement. This case study is an examination of the practice of data use in seven schools in one urban school district. The emergent themes of the study affirmed previous findings from the research such as teams' lack of time to use data, agendas to guide meetings, and norms to help keep teams on task. Other findings from this study revealed teams' lack of knowledge about the inquiry process, inconsistency of coaches' skills in facilitating meetings, the absence of principals, and not putting data at the center created a compelling argument for routinely monitoring or observing teams' data practice. Principals observing teams will inform them of processes in need of improvement, reveal the need for professional learning, and lead to improved processes to support student achievement.

Introduction

Since the early 2000s, educational reformers assume educators are using student data to reflect on what students should know compared to what they actually know (Hamilton, Halverson, Jackson, Mandinach, Supovitz, & Wayman, 2009; Mandinach, Honey, & Light, 2006; Wohlstetter, Datnow, & Park, 2008). Reportedly, using data systematically (referred to as data use, data-driven instruction, or the practice of data use) helps educators decipher parts of the lessons that students struggle with, identify potential causes, and consider possible solutions to remedy students' learning problems. Additionally, utilizing data aids educators in determining professional development needed to help them reteach lessons or improve content and pedagogical skills (Butler & Schnellert, 2012; Dunn, Airola, & Garrison, 2013; Ezzani, 2015; Farrell, 2015; Grigg, Kelly, Gamoran, & Borman, 2012; Jimerson & Wayman, 2015; Kuijpers, Houtveen, & Wubbels, 2010; Nunnaley, 2013). Though this practice is decades old, research reflects that educators continue to grapple with the data use process, lack the skills to use the process, and have limited time to perform the practice (Datnow & Hubbard, 2015; Jimerson & Wayman, 2015; Young, 2006). Yet, to close the learning gap for many students, the practice of data use, if employed with faithfulness, has the potential to close the learning gaps for children.

There remains the need for more robust studies that uncover what routinely occurs in data team meetings to spur continuous improvement with the process. In this study, the observation of seven urban public schools' data teams in a large Midwestern school district helped reveal what these teams do during the time set aside for data use practice. Observing the teams affords instructional leaders the opportunity to see what occurs compared to what they aspire to happen. Arguably if school leaders routinely observed teachers' data team meetings like they observe teachers' pedagogy in classrooms, they would learn what processes teachers need help with and support decision making. The research questions for this study were as follows: In what ways, if any, do educators use an inquiry framework to engage in the practice of data use to improve student achievement? What phase of the inquiry framework has the most impact on helping educators reach their desired outcomes? How do educators adjust the inquiry process if they conclude it is not helping them?

Theoretical Framework

Two well established educational processes that bolster the practice of data driven instruction are the inquiry process and professional development or professional learning (two terms used interchangeably in this paper). Each of these processes are firmly rooted in education today and are important processes that shape the implementation, evaluation, and effectiveness of the practice of data use. The adapted inquiry cycle developed for data driven instruction in the 1990s, is the process data teams use to examine student data to improve learning. Professional development, which gained a lot of momentum in the 1980s, supports the development of educators' pedagogical skills.

Professional Learning

Professional learning is essential for deepening teachers' content knowledge and developing their teaching practice. In the 1980s through the early 2000s, Joyce and Showers' (1982; 2002) framework which includes four components (i.e., rationale, model, practice, and feedback) supported building teachers' capacity by increasing students' retention rate. The components of the framework influence learning through: (a) rationale providing a sense of purpose, (b) modeling and demonstrating the skill, (c) allowing the learner to practice, and (d) feedback providing two-way communications between teacher and observer. Additionally, research revealed the importance of participants' involvement in pre-planning for professional development such as providing input into the planning and development of the training (Guskey, 2002; Yendol-Silva & Dana, 2004). Throughout the decade, there were many studies on professional development in public schools including the seminal study that re-

vealed five key characteristics of effective professional development (Garet, Porter, Desimone, Birman, & Yoon, 2001). The features were content focused, collaborative, intensive, coherent, and involved active learning (Garet et al., 2001; Guskey & Yoon, 2009; Honigsfeld & Dove, 2012). Studies using the framework revealed how it provides a process to engage teachers deeply in their practice (Butler & Schnellert, 2012; Kuijpers et al., 2010; Grigg et al., 2012).

Reevaluating the process in 2015, Desimone and Garet (2015) found multiple challenges to the five characteristics of professional development. They uncovered (a) inherent complexities of improving educators' content knowledge, (b) the need for differentiating teachers' professional development, (c) the necessity for interrelating the professional development and lessons, (d) the challenges of urban environments (e.g., mobility of urban teachers and students), and (e) the requisite for leaders to facilitate the implementing of professional development. As the practice of data use became more commonplace in schools, studies examining professional development in support of data use revealed teachers needed more input into what comprised professional development, additional time for the practice, and support implementing the practice (Jimerson & Wayman, 2015). Professional development was used in this study borrowed from Joyce and Showers (2002) model for providing a rationale of what the practice should look like. Additionally, components of the Desimone et al. (2009) process used in the study focused on elements the data teams identified as the team's weakness, team collaboration in reviewing the process, and active learning. Last, the professional development in the study also included input from the participants (Guskey, 2002; Jimerson & Wayman, 2015; Marsh, Farrell, & Bertrand, 2016).

Inquiry Cycle

In the late 1990s and early 2000s the inquiry cycle and professional learning helped practitioners study how to analyze students' performance data and use their findings to inform instruction (Bernhardt, 2005; Hamilton et al., 2009; Mandinach et al., 2006). That is, as professional development in schools increased, training content specific to the inquiry cycle grew. Mandinach and Gummer (2016) define the inquiry cycle as a process to define the problem, use data in support of the problem, transform data into information, use the information to make decisions, and evaluate the outcome. Many variations of the framework exist (Bocala, Henry, Mundry, & Morgan, 2014; Lipton & Wellman, 2012; Nunnaley, 2013) with most including a minimum of three phases (i.e., gather, analyze, and organize data). For example, in a three-step process, first, teachers purposefully gather student data in support of a defined problem (e.g., students' coursework or end-of-year state assessments). Second, as it relates to the problem, teachers analyze the data to gain an understanding

of what students are or are not learning and why. Third, teachers make decisions about their pedagogy based on their findings and monitor their progress. The three-step inquiry cycle was useful in this study because it is a simplified version of the many models available to educators. During 2005 through 2008, the groundswell of research on managing data facilitated school districts making students' performance data more accessible and user-friendly for teachers (Wohlstetter et al., 2008). There are studies about how the process is working in school districts with findings from many studies based on self-reporting data from teachers and administrators (Dunn et al., 2013; Ezzani, 2015; Farrell, 2015; Jimerson & Wayman, 2015).

The confluence of the two processes—inquiry cycle framework and professional development anchor this study. These processes are well-researched and deployed throughout school districts across the nation, making them key to this practice. The inquiry cycle framework was the lens used to observe teachers' and administrators' data practice in the schools while professional development served as the intervention to build teachers' capacity in the process. Participants held routine data team meetings, completed a survey and recommended teams' weaknesses they wanted to strengthen, studied elements of the characteristics of a collaborative team, implemented the examined characteristics into their process (some were more deliberate than others), and ultimately reflected on their learning experience. The following paragraphs elaborate on each process as it relates to its usage in the study.

The inquiry cycle used in this study helped determine if the teams were previewing or collecting data (e.g., students' tasks or tests), analyzing them, or organizing data to identify what to teach or reteach. As explained previously, there are numerous inquiry models; however, in this study, Lipton's and Wellman's (2012) three-phase process informed the field observations because of its ease of use. See figure 1.

Observed teachers not using the process with fidelity, required the use of professional development on the inquiry model. It was used to help build the participants' capacity for the inquiry cycle. To ensure the effectiveness of the study's intervention the use of professional development was grounded in research-based best practices such as content focused, collaborative, intensive, coherent, and involved active learning (Garet et al., 2001; Guskey & Yoon, 2009; Honigsfeld & Dove, 2012). The grounding of professional development in these areas meant focusing the content on the area the team felt needed the most support.

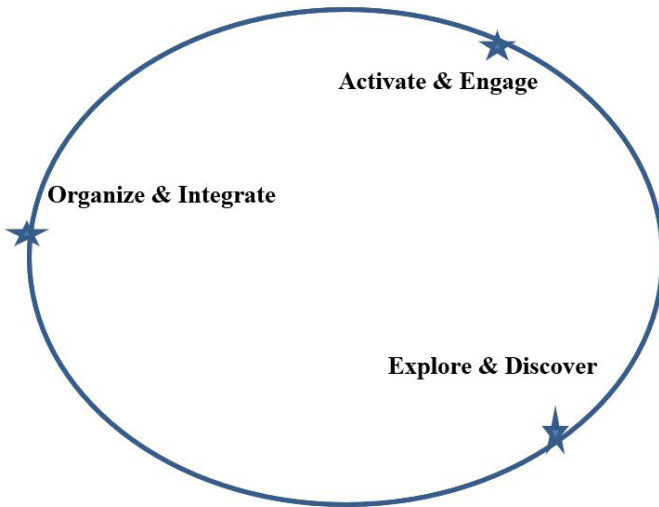
Methodology

In this case study (Miles & Huberman, 1994; Saldaña & Omasta, 2018) the examination of seven data teams comprised teachers, instructional coaches, and principals in six elementary and a middle school in one urban district in the Midwest. The multiple schools encompass a case

because they are part of one urban school district. This is consistent with Merriam's and Tisdell's (2016) description of a case study, "the single most defining characteristic of case study research lies in delimiting the object of study: the case (p. 38)." Additional rationale that supports this case is its boundedness due to the finite number of educators interviewed for the study (Merriam & Tisdell, 2016; Saldaña & Omasta, 2018).

Figure 1

Lipton and Wellman (2012) Collaborative Learning Cycle



Adapted from "Collaborative Learning Cycle" by Lipton and Wellman, 2012, *Got Data? Now What?*, p. 26. Copyright 2012 by the Solution Tree Press.

The study consisted of the participants attending seven data team meetings. In the first meeting, the data teams learned about the process, asked questions, and completed a pre-survey about their current data practice. In the second and third data team meetings, note taking of the teams' interactions helped document their behaviors during routine meetings. As previously mentioned, the Lipton's and Wellman's (2012) inquiry cycle was the lens used to help determine where on the cycle was the teams' discussions situated. For example, they were problem finding, analyzing, or testing theories. Additionally, Lipton's and Wellman's seven characteristics of collaboration helped identify the team members' collaborative behaviors. For example, the team: (a) maintained a clear focus, (b) embraced a spirit of inquiry, (c) put data to the center, (d) honored commitments to learners and learning, (e) cultivated relational trust, (f) sought equity, and (g) assumed collective responsibility (Lipton & Wellman, 2012). At the end of the third meeting the team members completed a written survey

to identify collaborative behaviors they presumed were weaknesses and wanted to mediate with professional learning. During the fourth meeting the participants received feedback on the professional development topic the team members selected. During the fifth meeting, participants received said development and in the sixth and seventh meetings, the participants attempted to incorporate what they learned into their practice. At the end of the seventh meeting, teachers and coaches responded to a questionnaire about their experience. In all, teachers, coaches, and principals from each participating data team completed a pre-survey (first meeting), a professional development survey (third meeting), and reflected on their experience (seventh meeting). Instead of reflecting on their experience in a group setting, principals received a one-on-one interview separate from the team. Finally, field notes from four observations (second, third, sixth, and seventh) of the data team meetings at seven schools resulted in twenty-eight sets of notes.

Participants

The participants included members of the data teams from seven schools consisting of a coach as facilitator, grade-level and content teams in six elementary schools, and one middle school, and the principals. The principals arbitrarily selected the teams that participated in the study. The demographics of the teachers in the study were similar to the national demographics of teachers with white women teachers representing the majority. Women also represented the majority of coaches, and the races were almost evenly split between white and African Americans. Last, principals comprised the most diverse group with one African American male, one Latinx female, one white female, and four African American females. All the teams had a mix of teachers who were either first-year or had three or more years of experience teaching. Since a district requirement for coaches was literacy certification, all were experienced educators. Finally, though principals were members of the data teams, only one elementary school principal routinely attended her school's data team meetings, while another elementary school principal attended half of the meetings and the others attended one or none.

Data Collection and Analysis

Primary data sources included two sets of hand-written field notes from the observations of four data team meetings at each school. Each participant completed pre-surveys at the first meeting to help explain the current processes of the data teams. Participants also completed surveys to determine what aspects of their teams' collaborative behaviors they wanted to intervene with professional development. The participants reflected

on their experience and shared their feedback in a questionnaire during the seventh meeting. Finally, separate interviews were conducted with principals at the end of the study which gave them an opportunity to reflect on the process and extend the interview if necessary. Secondary data included Lipton's and Wellman's (2012) inquiry cycle and characteristics of data teams. Additional secondary data included articles about the use of data in P-12 public schools, professional development, and the inquiry cycle.

Findings

Using the inquiry cycle as a lens during observations helped identify where in the process the participants' discussions resided. It also was a lens for survey participants to examine their own practice and determine their strengths or weaknesses. For example, the circular shape of the inquiry cycle signifies to end users data dialogues are continuous. Facilitators adhering to the process in the first phase might raise questions to encourage teachers to explore problems or make assumptions about students' performance. In the second phase, the facilitator and teachers analyzing students' work involves them looking for patterns to identify students' thinking and what occurred during their teaching. This part of the process also helps the facilitator and teachers uncover how they are contributing to the problem and in the third phase they can consider what they would do differently or what professional development they need. Also, in the last phase they are generating theories and exploring solutions to resolve students' learning problem(s). This cyclical process is ongoing because once the identified problem is resolved, educators continue to use the process to solve other areas of concern.

Several themes emerged from the examination of the survey and observation data documenting the facilitators' and teachers' use of the inquiry cycle. First, facilitators, who lacked expertise using the inquiry cycle, conducted data team meetings that resulted in random conversations because they did not situate the conversations in a specific phase of the cycle. Second, facilitators who lacked or had some expertise using the inquiry cycle ceded the facilitator role to attending principals who were experts using the cycle. These facilitators started with an agenda and if the meeting derailed, they redirected and put the conversation back on course. For example, if the team was analyzing students' work, some teachers would report only scores on an assessment; subsequently, a principal would interject and ask the teacher about patterns found in the students' assessments. Third, facilitators, experts with the inquiry cycle, conducted coherent data team meetings aligned with the cycle. They situated the conversation in a specific phase of the cycle and guided the conversation that kept teachers on task. For instance, after thoroughly analyzing the data, the facilitator would shift to considering research-based strategies to improve students' learning, signaling to the team they were moving to the third phase. Ad-

ditionally, teachers' responses to surveys administered prior to the observations illustrated their readiness to use data and were analogous to the findings of the observations of their practice. Of the seven district schools, four facilitators were in the first category, two in the second, and one in the third. The use of pseudonyms assigned to the district schools helped differentiate the examples cited.

In addition to the themes, four key findings from the observations included most teams did not adhere to a universal cycle of inquiry process, remained on task with expert facilitators, lacked the principals' participation, and agreed they needed to put data at the center. Furthermore, the teams used Lipton's and Wellman's (2012) scaled group inventory to self-assess their readiness to use data by identifying the groups' strengths and limitations. Finally, they selected professional development to remediate their weaknesses.

Lack of Fidelity to Inquiry Cycle Process

The first finding, teachers' lack of fidelity to the process resulted in disjointed team discussions during the data team meetings at most of the district schools. This finding is important because the research indicates that teachers have a finite amount of time to meet and discuss students' progress (Young, 2006). Therefore, processes that foster coherent dialogues about students' academic performance are necessary if teachers are to continually improve learning for all children. One example of disjointed dialogue in a district data team meeting involved the South Elementary School coach or facilitator, who commenced the team meeting with the intent of having teachers analyze students' recent district assessments—phase two of the inquiry cycle. Though the facilitator was somewhat knowledgeable about the inquiry cycle, she was unable to keep the teachers on task because she did not redirect the teachers back to the planned agenda when one teacher kept getting off topic.

In the second phase, teachers theoretically examine the tests and look for patterns; however, Janet, one of the two teachers attending the meeting, commandeered the conversation when she started complaining about the math curriculum. The principal at South was not present nor did she attend any of the observed meetings; therefore, the coach had to navigate difficult discussions, like this one, alone. To illustrate the point, instead of redirecting the conversation back to the task of analyzing the assessments, the coach proceeded to say she was advised to share a video with them. Janet responded, "...can't see the full video for the curriculum...asked about iPads." When asked if the teachers were on schedule in math, Janet stated, "We are okay with time, but we don't have time to do groups." When asked about centers she responded, "iPads make it easier."

Next, the coach inquired about the teachers' review of the recent reading assessments. Instead of a student-centered approach like using an

inquiry process to help students think aloud about their performance on the assessment, Janet promptly stated she made goals for the students, told them what they needed to do, and sent the assessments home with them. The actions did little to bolster students' ownership of their learning (Marsh, Farrell, & Bertrand, 2016). The team's scattered approach in the meeting resulted in missed opportunities to examine students' performance on the assessments which was the purpose of the meeting.

Teams' Remained on Task with Expert Facilitators

The second finding revealed that the teams' remained focused and on task when coaches were adept in using the inquiry process or the data driven instructional coaching model and prepared to facilitate meetings with complete agendas (Desimone & Pak, 2017; Glover, 2017; Glover, Reddy, Kurz, & Elliott, 2019; Joyce & Showers, 1982; Marsh, Bertrand, & Huguet, 2015). With the exception of three district schools where one school had an expert facilitator and two schools had facilitators with expert principals, the other facilitators and teachers who lacked the knowledge and support had fruitless meetings. One instance of this was the data team at West Elementary School where the principal rarely missed meetings, the teachers arrived on time with their required notes and assessments to discuss, and the coach had a prepared agenda. Teachers respected the purpose and time of these meetings. Though the skills of the coach at West were subpar compared to the principal's skills, she started the meeting on time with an agenda and facilitated the meetings with the support of the principal. The discussions were usually about the teachers' analyses of students' assessments they completed prior to the meetings. They used forms to show students' performance status of a particular skill, then proposed developmental activities to help students who were not performing at their grade level. Teachers' dialogues were mostly situated in the second phase—analyzing and on the verge of the third phase; however, these discussions were not always fluid because most of the teachers struggled with identifying research-based strategies for students.

During these times, the principal frequently prompted teachers to think aloud about possible strategies. She challenged them to think about reading or math strategies while at the same time inquiring about students' social and emotional well-being. To illustrate the point, Ms. Sands, one of the primary teachers said, "Students struggled with the letter sound recognition assessment and differentiating but the good news is number writing." She went on to say how many students did well as the second teacher, Mr. Thompson, asked if any students turned the numbers around. When Ms. Sands said yes, the principal asked, "Who were those students?" After she named them, the principal promptly replied, "Are parents getting letters of concern?" Ms. Sands answered, "If they come in today (referring to the school's scheduled parent meetings) or tomorrow, if not I'll send it

home.” The principal then turned her questioning away from Ms. Sands to Mr. Thompson and the other teacher. It was typical for her to use probing questions to nudge teachers to consider next steps once they completed their analyses because the coach did not always follow-up after teachers reported their findings.

Another example of how the district’s expert or somewhat expert facilitators use of the inquiry cycle supported coherent meetings involved the coach from North Elementary School who was always prepared and promptly started the meetings on time in her classroom. Looking around the classroom, there were visible signs of students’ progress illustrated by colors such as red, yellow, and green often seen in schools. The coach convened the meeting as one teacher commenced talking about a student’s behavior. Subsequently, the coach reminded them of the team’s norms and signaled the start of the meeting by asking the teachers, “What are some positive things that happened this week?” One teacher spoke about students selecting books to read while the other spoke of students’ excitement when learning about the solar system. The coach adeptly stated, “Let’s talk about your reflections using data.” At this point the principal entered the meeting late and never engaged, and this was the only meeting she would attend. With the discussion underway the teacher, who broached students’ reading selections, said she did not know how to move students forward. It is important to note that exposing her vulnerability in the presence of her principal and coach revealed the trust between the educators. The coach supported her by telling her to speak about students individually and when she mentioned one student the coach said, “What I noticed about her in tutoring is that she likes to rush through everything.” The discussions remained focused as both teachers talked about students, their progress, and what they were doing to add to the students’ problems. Towards the end of the meeting the coach suggested they look at another data set to determine patterns. North’s skilled coach intuitively used the inquiry cycle to keep everyone focused on the data as the teachers spoke freely about students’ progress and were open to learn from the process. Her behaviors prevented the teachers from rushing to a solution prior to them fully understanding the problem.

Conversely, the district’s coaches who lacked skills using the inquiry cycle, commenced meetings with sparse or no agendas, rarely enforced norms, usually had late comers to the meetings unprepared to discuss students’ progress or team members that hijacked the conversation. Unfortunately, this behavior occurred at many of the observed teams at the district’s elementary schools South, James, Polk, Banneker, and Valley Middle School. For example, a data team meeting at James Elementary School illustrated the lack of preparedness for a planned meeting when someone from the office had to call over the public address system to the teachers’ classrooms to inform them of the meeting. Banneker’s coach lacked the skills required to facilitate the meetings and, though her prin-

principal had the expertise, she did not attend every meeting to support her. South was another district school where the coach lacked the expertise using the inquiry cycle. Though she usually prepared an agenda and started the meetings as scheduled, she did not establish norms; therefore, the teachers seldom arrived on time and when they did, they got off task and the facilitator ultimately succumbed and stopped redirecting the discussion. For example, once after she reviewed the agenda with teachers, two of them got off topic and started talking about students' assessments and one said, "I got dinged on my evaluation..." while her colleague asked, "How was it your fault?" The coach said, "Let's get back on course." The teachers then started talking about the passing percent of the students' assessment, how high the percentage was, the difficulty on students taking the assessment online, and how students did not understand the test. One teacher said students were doing well in her class although their performance on the test showed otherwise. The facilitator stopped redirecting the dialogue, and it morphed into conversations about the curriculum. The team's scattered discussion never stayed on one topic long enough for them to explore the causes of students' performances.

Teams Lacked Principals' Participation

The third finding, the absence of principals in these data team meetings, was noticeable. Out of the seven district schools that participated in the study only the principal at West routinely attended and was an active participant. As an experienced leader, accomplished elementary school teacher, and literacy expert, West's principal could easily identify students' deficiencies and recommend research-based strategies for teachers once they described students' weaknesses in reading. Though she asked the teachers many questions, she occasionally interjected humor and often assured them that her questioning was not a criticism of their work but support of their learning. The other district leader, Banneker's principal, randomly attended team meetings and, when she did, the coach who was unfamiliar with the inquiry process, acquiesced to her leadership. Sitting with the coach before a meeting, she stated she felt inadequate with the practice; therefore, it was understandable why she yielded the role of facilitator to the principal. The Banneker's principal's tone was different from her colleague at West; it was firmer and could be interpreted as harsh sometimes. She only attended some meetings and would interject comments at times that veered the team off course. On the other hand, principals from the district's North Elementary School and Valley Middle School attended one team meeting but never engaged with the teams. The principals from the remaining elementary schools, James, Polk, and South never attended the meetings.

The district's leaders adept at using the inquiry cycle, like the principal at West or the coach at North, were able to engage teachers in

examining students' coursework and assessments because of their readiness skills to use data as defined by Lipton's and Wellman's (2012) scaled group inventory. Focusing on the data and remaining on task, the teams also had coherent discussions about possible causes for students' performances, and it was clear what phase of the inquiry cycle the discussions resided. Using cognitive coaching as a vehicle to mediate teachers thinking, West's principal and North's coach helped teachers by questioning them throughout the meetings as well as pausing or paraphrasing their thinking out loud which enabled teachers to reflect. This usually led to positive outcomes for the meetings such as maintaining focus on the data or keeping data at the center of the work (Lipton & Wellman, 2012). In addition to the leaders using coaching tools to facilitate teacher self-directed learning, there was a high degree of trust in these two data teams as evidenced by teachers' willingness to be vulnerable in the presence of the principals or experimenting without fear of reprisal. In contrast, if principals were absent and coaches were unskilled at guiding discussions using the inquiry cycle, the teams, if also untrained at using the model, usually were unable to follow the process that leads to understanding students' performance.

Teams Needed to Put Data in the Center

After the initial observations, participants responded to Lipton's and Wellman's (2012) scaled group inventory, a survey that illustrates a teams' readiness to use data. Each member evaluated the team's readiness to conduct data team meetings, selected several characteristics they presumed were weaknesses of the team, and ultimately selected one to learn about in professional development training. The inventory encompassed seven essential qualities for developing a culture of inquiry which includes (a) maintain a clear focus, (b) embrace a spirit of inquiry, (c) put data at the center, (d) honor commitments to learners and learning, (e) cultivate relational trust, (f) seek equity, and (g) assume collective responsibility (Lipton & Wellman, 2012, p. 11). The above survey's seven characteristics each had three questions. Each participant received the survey results and discussed the team's selections at the fourth meeting. See figure 2. Six out of seven schools selected "put data at the center" as the skill they wanted to study in their professional development training; there was a three-way tie for the skills—maintain a clear focus, embrace a spirit of inquiry, and honor commitment to learners and learning. Lipton and Wellman (2012) stated teams that put data at the center, "... are assessment literate. They keep data central to the conversation, seeking out and using multiple sources and multiple types to inform their choices and plans" (p. 13). Since the majority of the district's data teams selected this topic, it was apparent to them like it was to the observers that they needed help using structures to facilitate data conversations. During the fifth meeting, data teams received professional development on the inquiry cycle and analyz-

ing data. After the professional development, the participants attempted to model in their last two meetings what they learned in the training.

Discussion

In response to the first research question, (i.e. do educators' use an inquiry framework to engage in the practice of data use?) the observations echoed what is currently in the research literature: teachers' use of data varies and is contingent upon professional development received as pre-service teachers or on-the-job training (Mandinach & Gummer, 2016), and the presence of principals or trained coaches to keep meetings on track is essential to success. The study revealed one distinction, the lack of monitoring of data teams' practice. Teams do not receive feedback on aspects of the practice that are beneficial to promoting student achievement nor input on problematic facets of their practice. For example, the Banneker coach, who revealed her lack of knowledge about the inquiry process in private illustrated the lack of trust between the coach and the principal. Her resistance to being vulnerable and exposing her lack of knowledge about the inquiry process to the principal revealed a lack of relational trust. As a result, she was unable to lead discussions about students' learning using an inquiry cycle typically as instructional coaches should be able to do. The principal's habit of taking over the role as facilitator, when she attended the meetings, further illustrated how the coach could perceive the principal's behaviors as disrespectful or lacking confidence in her skills.

If the district observed data teams similar to how they observe students' learning, data teams could receive feedback on how their actions were leading to or stagnating student achievement. Observers of the Banneker's data team would document what they witnessed, analyze their findings, and likely contend they noticed the team spoke freely when the coach facilitated the meeting, indicating a trusting environment. However, observers would find the opposite when the principal facilitated because she directed teachers instead of using open-ended questions to engage them. According to Bryk and Schneider (2002) when relational trust is part of the fabric of a school, it facilitates accountability; therefore, it is essential for encouraging collaboration. Illustrations of trust in meetings consist of members actively listening to one another, supporting each other encounter new learning, and allowing people to experiment without penalties (Bryk & Schneider, 2002). Though lack of trust was observed in two of the seven district schools, most of the teams exhibited characteristics of relational trust. It was not surprising that only one data team viewed relational trust as one of its weaknesses and that team is the one where trust was prevalent.

The second question, what phase of the inquiry framework was most helpful to educators reaching their desired outcomes? This study revealed that most of the data teams did not use an inquiry model and those

that did situated their discussion in phase two, analyzing data. Figure 2 demonstrates that, although the teams' behaviors fit into phase two, most of the behaviors fell short of meaningful tasks usually performed in this phase. For instance, teachers who are adept at using data are looking for patterns in students' work in search of clues to identify their thinking and rationale for decisions. They also try to discover the students' readiness for the lesson and examine their pedagogy to determine if they contributed to the problem(s). Furthermore, teachers look for the root causes of the students' learning problems because they want to make certain they are solving the correct problem(s).

Figure 2

Data Teams' Inquiry Processes During Study

School	James	Polk	West	North	South	Banneker	Valley
Inquiry phase status during the initial observations*							
Activating & engaging	NO	NO	NO	NO	NO	NO	NO
Exploring & discovering	NM	PM	M	M	NM	PM	NM
Organizing & integrating			PM				
Characteristics on scaled group inventory**							
Maintain a clear focus				X	X	X	
Embrace a spirit of inquiry	X		X	X			
Put data at the center	X	X	X	X		X	X
Honor commitment to learners	X			X	X		
cultivate relational trust				X			
Seek equity							
Assume collective responsibility		X				X	

Using Lipton's & Wellman's (2012) model, *the following letters (e.g., M=Met; PM=Partially Met; NM=Not Met; NO=Not Observed) situates the data teams' discussion during most of the study; ** The "x" denotes the characteristics defined by Lipton & Wellman (2012), selected for study by the data teams. Adapted from "Got Data? Now What?" by Lipton and Wellman, 2012, Got Data? Now What? Copyright 2012 by the Solution Tree Press.

The first two observations of the districts' data teams showed little evidence that the data teams performed at the previously stated level. Only two elementary schools, North and West were on the verge of analyzing work in phase two; yet they remained a distance from mining data to get to the root cause. For example, when North's team compared their thinking about the inquiry process before and after the professional development, their comments aligned with the descriptions of the first two observations. Prior to the training, two of the four members of the team thought their discussions about student data did not inform instruction while the other two strongly believed that it did. Their comments after the study were also evenly split; one half liked the current process while the other half saw benefits to mining data to uncover students' learning problems. West's teams also agreed with the descriptions of the first two observations that the teachers relied on the coach's skills. However, after the professional development, they said the process allowed them to reflect on their pedagogy, and it helped them examine how students learn.

During the other schools' first two observations, the teams talked about the complexity of the assessments, the deficits of students, shortcomings of the curriculum, and unrealistic expectations placed upon them. When some teams discussed the results, the conversations rarely penetrated below the surface. It was not surprising that some of the teams struggled to name research-based strategies because, except for a couple of coaches, most of them did not use the inquiry process to facilitate data dialogs. Instead, they provided teams with copies of assessments, asked them to look at the tests, and solicited team members' opinions about the students' results. After the professional learning, some data team members shared positive comments. For example, someone appreciated the questioning technique to help them deeply examine the data in search of students' learning problems while another person commented, "We need to do a lot more [sic] we are not doing a very good job at all." After the training, participants at James, Polk, and Banneker Elementary Schools and Valley Middle School viewed the professional development as beneficial while about a third continued to view the process as a way to help students' test performance.

The following outcomes inform the third question, do educators adjust their process (inquiry cycle) if it is not helping them improve student achievement? One of the findings from this study illustrated that teachers did not use the cycle of inquiry; consequently, the teams did not make adjustments. Nevertheless, after the teams received training, some of the data teams attempted to model their learning in team meetings during the last two observations of the study. For example, West's teachers wanted training on putting data at the center because, like many data teams, the teachers were quick to throw a solution at a problem not fully developed. Therefore, the team learned to use a protocol to assist them in getting to the root cause of students' problems. The protocol forced them to continue

to question the problem until they exhausted all possibilities. Ms. Sands, one of the first West team members to embrace the protocol, used it with some success, which encouraged others to try it.

Most of the principals' interviews indicated that they were cognizant of the need for professional development on the inquiry process for teachers. The principals at the elementary schools all commented on the need for primary school teachers to learn about the process. Since elementary teachers in grades three through six administer the state assessments to their students, they are more familiar with the process. Additionally, principals mentioned that when teachers get stuck using data, they do not know the next steps to take. This was likely the reason why most teams remained in phase two because of their unfamiliarity with the inquiry cycle. One principal summed up her thinking by stating, "There should be no learning task that's not related to some sort of data. I think holistically, you need to look at the whole student and make decisions based on the data from many different sources." In the end, some schools benefitted, and others did not.

Conclusions

Though the practice of data use to inform instruction has been in place over two decades, vast opportunities to improve remain. Observing the practice in seven schools exposed the teams' start times of the meetings, coaches' facilitation skills, content discussed, processes used, participants' involvement, teams' collaboration, the focus on data, use of professional development, and the attendance of the principal. Observing the nonexistence of processes used to facilitate data dialogs, the inconsistency of coaches' skills and the absence of principals in meetings signaled a need for district and school leaders to monitor data teams' practice, similar to how they observe teachers' pedagogy. We know teachers are closer to the students than other faculty and their teaching methods matter. The same is true for data teams—how they talk about students' performance, find and solve students' learning problems, and hone their pedagogical skills with professional development matters. Data teams are the venue for where these tasks should occur; therefore, principals need to be present. They need to be willing participants in data team meetings and, at times, the observer so they can discern when the skills of a coach need improvement, when teachers lack the knowledge of an inquiry process and can differentiate the training according to the teachers' needs, and help teams delve deeper in the data to find the right problems to solve. Principals' leadership in data team meetings is crucial.

One of the limitations of this study was the abbreviated professional development. Research shows participants need ongoing professional development to be effective; therefore, one recommendation is to provide longer professional development when replicating the study. An-

other recommendation is to conduct similar studies to inspect how educators use the time allocated to examine students' performance on class assignments or assessments. If there is a pattern of underperforming data teams, acknowledging the problem, and implementing widespread monitoring practices will bolster schools in their efforts to improve student achievement. If left unchecked, there may be more underdeveloped practice in need of support whereas monitoring data teams will likely reveal how to improve the practice and subsequently student achievement.

References

- Bernhardt, V. L. (2005). Data tools for school improvement. *Educational Leadership*, 62(5), 66-69.
- Bocala, C., Henry, S. F., Mundry, S., & Morgan, C. (2014). *Practitioner Data Use in Schools: Workshop Toolkit* (REL 2015-043). U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory, Northeast & Islands. Retrieved from <https://eric.ed.gov/?id=ED551402>.
- Bryk, A. S., & Schneider, Barbara. (2002). *Trust in schools: A core resource for improvement. America's schools can get better at getting better*. Russell Sage Foundation.
- Butler, D., & Schnellert, L. (2012). Collaborative inquiry in teacher professional development. *Teaching and Teacher Education*, 28, 1206-1220. doi.org/10.1016/j.tate.2012.07.009
- Datnow, A., & Hubbard, L. (2015). Teachers' use of assessment data to inform instruction: Lessons from the past and prospects for the future. *Teachers College Record*, 117(4), 1-26.
- Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher*, 38(3), 181-199. doi.org/10.3102/0013189X08331140
- Desimone, L. M., & Garet, M. S. (2015). Best practices in teachers' professional development in the United States. *Psychology, Society, & Education*, 7(3), 252-263. Retrieved from: <https://pdfs.semanticscholar.org/31ff/d06b4df5bb399f782d3985f17311d2bc44ae.pdf>
- Desimone, L. M., & Pak, K. (2017). Instructional coaching as high-quality professional development. *Theory Into Practice*, 56(1), 3-12. doi.org/10.1080/00405841.2016.1241947
- Dunn, K. E., Airola, D. T., & Garrison, M. (2013). Concerns, knowledge, and efficacy: An application of the teacher change model to data driven decision-making professional development. *Creative Education*, 4(10), 673-682. doi.10.4236/ce.2013.410096
- Ezzani, M. (2015). Rethinking district reform. *Cogent Education*, 2, 1-20. doi.org/10.1080/2331186X.2015.1018698

- Farrell, C. C. (2015). Designing school systems to encourage data use and instructional improvement: A comparison of school districts and charter management organizations. *Educational Administration Quarterly*, 5(3), 438-471. doi.org/10.1177/0013161X14539806
- Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K. S. (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal*, 38(4), 915-945. doi.org/10.3102/00028312038004915
- Glover, T. A. (2017). A data-driven coaching model to promote students' response to early reading intervention. *Theory Into Practice*, 56(13), 13-20. doi.org/10.1080/00405841.2016.1260401
- Glover, T. A., Reddy, L. A., Kurz, A., & Elliott, S. N. (2019). Use of an online platform to facilitate and investigate data-driven instructional coaching. *Assessment for Effective Intervention*, 44(2), 95-103. doi.org/10.1177/1534508418811593
- Grigg, J., Kelly, K. A., Gamoran, A., & Borman, G. D. (2012). Effects of two scientific inquiry professional development interventions on teaching practice. *Educational Evaluation and Policy Analysis*, 35(1), 38-56. doi.org/10.3102/0162373712461851
- Guskey, T. R. (2002). Does it make a difference? Evaluating professional development. *Educational, School, and Counseling Psychology Faculty Publications*, 7. Retrieved from https://uknowledge.uky.edu/edp_facpub/7
- Guskey, T. R., & Yoon, K. S. (2009). What works in professional development? *Phi Delta Kappan*, 90(7), 495-500. doi.org/10.1177/003172170909000709
- Hamilton, L., Halverson, R., Jackson, S., Mandinach, E., Supovitz, J., & Wayman, J. (2009). *Using student achievement data to support instructional decision making* (NCEE 2009-4067). National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from https://repository.upenn.edu/gse_pubs/279/
- Honigsfeld, A., & Dove, M. G. (2012). Collaborative practices to support all students. *Principal Leadership*, 12(6), 40-44. Retrieved from <https://eric.ed.gov/?id=EJ975847>
- Jimerson, J. B., & Wayman, J. C. (2015). Professional learning for using data: Examining teacher needs & supports. *Teachers College Record*, 117(4), 1-36. Retrieved from <https://eric.ed.gov/?id=EJ1056726>
- Joyce, B., & Showers, B. (October, 1982). The coaching of teaching. *Educational Leadership*, 40(1), 4-10. Retrieved from <https://eric.ed.gov/?id=EJ269889>
- Joyce, B. R., & Showers, B. (2002). Student achievement through staff development. Association for Supervision & Curriculum Development. Retrieved from https://www.unrwa.org/sites/default/files/joyce_and_showers_coaching_as_cpd.pdf

- Kuijpers, J. M., Houtveen, A. A. M., & Wubbels, T. (2010). An integrated professional development model for effective teaching. *Teaching and Teacher Education*, 26, 1687-1694. doi.org/10.1016/j.tate.2010.06.021
- Lipton, L., & Wellman, B. (2012). *Got data? Now what?* Solution Tree Press.
- Mandinach, E. B., Honey, M., & Light, D. (2006). *A theoretical framework for data-driven decision making*. Paper Presented at the annual meeting of AERA.
- Mandinach, E. B., & Gummer, E. S. (2016). *Data literacy for educators: Making it count in teacher preparation and practice*. New York, NY: Teachers College Press.
- Marsh, J. A., Bertrand, M., & Huguet, A. (2015). Using data to alter instructional practice: the mediating role of coaches and professional learning communities. *Teachers College Record*, 117(4), 1-40.
- Marsh, J. A., Farrell, C. C., & Bertrand, M. (2016). Trickle-down accountability: How middle school teachers engage students in data. *Educational Policy*, 30(2), 243-280. doi.org/10.1177/0895904814531653
- Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative research: A guide and implementation*. San Francisco, CA, Jossey-Bass.
- Miles, M. B., & Huberman, M. A. (1994). *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks, CA: Sage Publications.
- Nunnaley, D. (2013) Professional development to build data literacy: The view from a professional development provider. *The Journal of Educational Research & Policy Studies*, 13(2), 39-49. Retrieved from <http://www.usingdatasolutions.org/files/111752933.pdf#page=42>
- Saldana, J., & Omasta, M. (2018). *Qualitative research: Analyzing life*. Sage Publications, Inc.
- Wohlstetter, P., Datnow, A., & Park, V. (2008). Creating a system for data-driven decision making: Applying the principal-agent framework. *School Effectiveness and School Improvement*, 19(3), 239- 259. doi.org/10.1080/09243450802246376
- Yendol-Silva, D., & Dana, N. F. (2004). Encountering new spaces: Teachers developing voice within a professional development school. *Journal of Teacher Education*, 55(2), 128-140. doi.org/10.1177/0022487103261447
- Young, V. M. (2006). Teachers' use of data: Loose coupling, agenda setting, and team norms. *American Journal of Education*, 112(4), 521-548. doi:10.1086/505058

Vanessa Garry is an assistant professor at the University of Missouri -St. Louis