Co-constructing distributed leadership: district and school connections in data-driven decision-making

Vicki Park[a]; Amanda Datnow[a]

[a] University of California, San Diego, USA

PLEASE SCROLL DOWN FOR ARTICLE

Routledge
Taylor & Francis Group

Co-constructing distributed leadership: district and school connections in data-driven decision-making

Vicki Park* and Amanda Datnow
University of California, San Diego, USA

The purpose of this paper is to examine leadership practices in school systems that are implementing data-driven decision-making employing the theory of distributed leadership. With the advent of No Child Left Behind Act of 2001 (NCLB) in the US, educational leaders are now required to analyse, interpret and use data to make informed decisions in all areas of education, ranging from professional development to student learning. The emphasis on data-driven decision-making practices to bring about improved student outcomes is relatively a new feature of the education reform landscape and thus requires educators to learn and develop new competences. Leadership is one crucial bridge that can support and direct these new learning efforts. Using qualitative data from a case study of four urban school systems, the authors' findings indicate that: (1) leaders at all levels co-constructed the vision and implementation of productive data-driven decision-making by creating an ethos of learning and continuous improvement rather than one of blame; (2) in order to give data relevance, leaders also distributed decision-making authority in a manner that empowered different staff members to utilise their expertise; and (3) the school systems directed their resources on building human and social capacity mainly by focusing on modelling and knowledge brokering amongst their staff. The paper concludes with a discussion of research and policy implications based on the findings.

Keywords: *data driven decision-making; data use; distributed leadership; district and school connections; school reform; organisational improvement*

Introduction

Questions regarding the impact of leaders and leadership practices on the conditions of schooling and student outcomes have taken centre stage within the field of education administration research. In an era of standards-based reform and accountability systems, the push for improved student achievement and the development of effective leadership practices in the US has never been greater. With the advent of the No Child Left Behind Act of 2001 (NCLB), educational leaders are now required to analyse, interpret and use data to make informed decisions in all areas of education, ranging from professional development to student learning. This policy resides on the assumption that the gathering and use of data

*Corresponding author. Email: vbpark@ucsd.edu

bolster continuous improvement efforts by helping to assess existing capacities, monitor progress, evaluate the efficacy of programmes and inform development plans (Cromney 2000, Earl and Katz 2006). Research, though largely without comparison groups, suggests that data-driven decision-making has the potential to increase student performance (Alwin 2002; Lafee 2002; McIntire 2002; Doyle 2003; Supovitz and Taylor 2003). However, data need to be actively used to improve instruction in schools, and individual schools often lack the capacity to implement what evidence suggests (Wohlstetter et al. 1997).

The emphasis on data-driven decision-making practices to bring about improved student outcomes is a relatively new feature of the education reform landscape and thus requires educators to learn and develop new competences. Leadership is one crucial bridge that can support and direct these new learning efforts (Elmore 2000). In the past, individualised accounts of leaders have tended to dominate research on educational leadership (Gronn 2003). However, grappling with the complexity of the postmodern information age has meant that the impetus for improvement cannot be solely located within exceptional principals or expert teachers. More contemporary research and practice of educational leadership has begun to recognise the need to move beyond individualistic, role-embedded conceptualisation of leadership and leadership practices to one that focuses more broadly on sharing of knowledge, expertise and action (Gronn 2000; Elmore 2002; Spillane et al. 2004; Harris 2007).

The purpose of this paper is to examine leadership practices in school systems that are implementing data-driven decision-making. We first review the research on educational leadership, focusing on how the concept of leadership has evolved over time. We then discuss findings from a multi-site qualitative case study of four urban school systems. We argue that our study fills an important niche by focusing on how leadership practices are influencing and are influenced by the use of accountability data.

Research on educational leadership

What counts as leading and how does it matter? In the context of school reform researchers argue that the purpose of educational leadership is to improve student learning and to foster equity in educational outcomes (Firestone and Riehl 2005). Studies on educational administration suggest the importance of leadership in directing school improvement efforts. Schools leaders can make important contributions to student learning although this impact is mostly indirect (Hallinger and Heck 1996). Leaders primarily exert their influence by setting directions for school improvement, cultivating shared goals and norms, developing human capacity, and modifying structures to create conditions to support student achievement (Leithwood and Riehl 2005). Most importantly, leaders can improve student learning through the development of internal accountability which is defined as a combination of moral accountability (i.e. shared norms) and 'peer-enforced professional accountability' (Firestone and Shipps 2005, p. 97). This internal accountability entails that educators

are not only responsible for students' well-being but are also obligated to one another as professionals.

With such new directions for educational leadership, notions of what it means to lead have evolved into a perspective that focuses on cognitive frameworks based on constructivist learning theories. Take for example a primary definition of educational leadership focusing on 'the work of mobilizing and influencing others to articulate and achieve the school's shared intentions and goals' (Leithwood and Riehl 2005, p. 13). Within this definition, there are specific assumptions made about the nature of leadership as one that is embedded within social relationships to serve social ends. Leadership is not solely an individual or personal endeavour but is a collective phenomenon (Leithwood and Riehl 2005). Thus, it is both a process of influencing and managing and, above all, it is context dependent because it requires contingent manoeuvring. This cognitive approach recognises that people actively construct knowledge and that learning is an interactive process situated in specific social contexts (Schunk 2004; Prestine and Nelson 2005). Therefore, any reform effort needs to take into account how practitioners and students make sense of policy and actions (Stein and Spillane 2005). Extending this line of thought, leading requires actors to actively construct interpretations of school improvement that fosters both educator and student learning as well as developing conditions that support such efforts.

Given the trends towards highlighting the cognitive dimensions of leading, the concept of distributed leadership, in particular, points to important directions for research and practice (Gronn 2000; Spillane et al. 2004; Harris et al. 2007). First, the concept moves away from viewing leadership practice as an inherent property of formal authority figures or institutionalised roles. Rather, leadership operates within a network of actors with shared and complementary knowledge and expertise. As a result, the perspective does not focus solely on the individual principal or teacher but with the 'concertive action' of a group (Gronn 2000). In other words, the unit of analysis is not the individual but the social interaction within the organisation as a whole. Spillane et al. (2004) argue further that the leadership activity itself – defined as the interaction amongst leaders, followers and situation in which tasks are executed – is the main unit of analysis. Second, and related to the notion of concerted action, emphasis is placed on interdependency, dispersed responsibilities, and reciprocity rather than control and compliance (Elmore 2000; Spillane et al. 2004; Harris 2007). Consequently, a distributed leadership perspective enables organisations to build on the strengths and skills of a variety of members.

Although theories focusing on social-cultural and cognitive aspects of leadership present a fruitful line of inquiry, much remains to be investigated. As noted by Stein and Spillane (2005), research on principal leadership has largely left unexamined how teachers make sense of policy and actions. Moreover, a review of literature suggests a need for further empirical studies on distributed leadership (Bennett et al. 2003). Studies that utilise the concept have tended to concentrate on school-level practices (Spillane et al. 2004) without analysing the extent to which larger contexts, such as district leadership, may shape school level leadership styles, processes and practices.

The emerging research on the implementation of data-driven decision-making highlights the importance of both school- and district-level leadership in reform efforts. School systems play an increasingly pivotal role in leading and collaborating with school sites to make data-driven practices an engine of reform. Inclusiveness in the data-driven decision-making process is often prevalent. In districts that support data-driven decision-making, the superintendent and school board members often know how to lead and support data use. Districts often have district staff that work as liaisons with principals and individual schools (Armstrong and Anthes 2001). Districts and schools are also actively transforming their professional development practices from one that focuses on compliance to support in order to build the capacity of their staff to participate in decision-making processes and to create an organisational culture of inquiry (Petrides and Nodine 2005). Not only are principals privy to repositories of assessment data, but teachers as well. Teachers are often encouraged to take a close look at grade-level and classroom data and share and discuss the data with each other in order to make instructional choices (Armstrong and Anthes 2001).

Overall, while the established literature confirms the importance of effective leadership (Hallinger and Heck 1996; Leithwood and Jantzi 2000, Fullan 2001; Murphy and Datnow 2003), the emerging research on the implementation of data-driven decision-making further suggests that the relationships between districts and schools and between principals and teachers are changing (Armstrong and Anthes 2001; Tognieri and Anderson 2003; Datnow et al. 2007). Given the increasing interdependency between districts and schools in leading data-driven decision-making practices, it is important to unpack how leadership practices are being changed and changing reform efforts.

In our paper, we analyse the connections between district- and school-level leadership practices employing the theory of distributed leadership. First, our perspective is that leadership roles and activities are not merely a function of individuals with institutional responsibilities but are 'stretched over' people, places and activities (Spillane et al. 2004). In other words, the concept of leadership centres on an activity system that comprises actors, activities and processes within a specific context. Second, we argue that leaders at the district level mediate school reform by building a common interpretation and orientation toward data-driven decision-making which are then mediated at the school level by formal and informal leaders. From this framework, our overall research question focuses on how distributed leadership takes shape in the context of data-driven decision-making. More specifically, we ask: (1) How did district and school leaders cultivate a culture of data-driven decision-making? (2) What types of activities and processes were distributed to making data-driven decision-making relevant? (3) How did leaders build capacity for data-driven decision-making?

Methods

The data for this paper were drawn from a multi-site case study on the implementation of data-driven decision-making in high-performing school systems.

Case study methods enable the study of a phenomenon in real-life context, especially when the boundaries between the phenomenon and context are not clearly distinguishable (Yin 2003). The goal is to generalise to theoretical propositions, not to populations; in other words, the aim was to expand the knowledge of the processes and outcomes of data-driven decision-making and distributed leadership as it plays out in a given setting and context. Thus, we conducted case studies to capture the details of data-driven instructional decision-making in four school systems across the US.

Site selection

Purposive sampling was used to identify and select research sites (Yin 2003) since we were interested in examining how school systems implemented data-driven decision-making practices. Drawing on a national sample, we chose systems on the basis of their status as leaders in using data for instructional decision-making and for their record of improved student achievement over time. The systems were selected as exemplars of data-driven decision-making (DDDM) practices and were invited to participate based on three main criteria: (1) systems served a diverse student population with regards to race/ethnicity and socioeconomic status; (2) schools had records of improving achievement scores based on state accountability systems; and (3) schools had been nationally recognised as leaders in DDDM practices.

The four systems we studied have obvious differences in size, history and mission. Two are mid-size urban public school districts that have been in operation for many years. Both have histories of steadily improving student achievement over the past decade. The two non-profit charter management organisations (CMO) are relatively new systems, the former having been founded in 1998 and the latter in 2003. They are both networks of charter schools that operate central offices that function as quasi-school districts, providing oversight in accounting, curriculum, governance and organisation. All four systems have schools in urban locations and/or those serving large numbers of low-income students and/or students of colour.

After a list of traditional and charter management organisations was chosen from a national sample, two schools within each system type were asked to participate in the study with the aid of the superintendent. These schools were recommended to us by system personnel because of their high level of engagement in data-driven decision-making. Our study included six elementary schools, one middle school, and one high school.

Data collection and analysis

Our site visits to the systems and schools took place the spring of 2006. We interviewed two–three system/district administrators, including the superintendent, assistant superintendent (in three of the four systems) or chief academic officer, and the director of research and/or assessments. At each school, we interviewed the

Table 1. School systems and individual school context.

| | Grades | Size | Race/ethnicity in percentages | | | | | Free-lunch status | LEP status | |
			Afr. Am.	Asian/ Pac. Isl.	Latino	White	Nat. Amer.	% Eligible	% ELL	Location
Adams Public School District	PK–12	49,574	1	31	53	15	<1	60	47	
School A	K–6	571	<1	72	11	17	<1	33	25	Urban
School B	K–3, 4–6	1223	1	25	67	7	<1	73	56	Urban
Gates Public School District	PK–12	57,931	32	2	61	6	<1	78	27	
School C	K–4	609	15	2	81	4	0	86	66	Urban Fringe
School D	9	898	20	2	73	5	0	78	12	Urban Fringe
Innovate Charter Management Organization		3600								
School E	K–8	405	15	0	72	0	0	88	66	Urban
School F	K–5	351	9	13	37	35	<1	34	30	Suburban
Achieve Charter Management Organization 2	K–8	1539								
School G	5–8	270	64	<1	33	2	0	84	10	Urban
School H	K–3	218	75	<1	22	2	0	77	5	Urban

Note: All data reported are for 2005–2006. Figures have been rounded to the nearest percent.

principal, often an assistant principal, and a minimum of five teachers across grade levels. We also interviewed lead teachers, where possible. We conducted approximately 70 interviews across the four systems and schools. At each school, we also conducted informal observations of the school and classrooms and relevant meetings. We also gathered a plethora of documents at the school and system levels that were pertinent to our study. All interviews were transcribed verbatim and coded for analysis using HyperResearch qualitative data analysis software.

For the purposes of analysis, we were interested in several key components with the systems as the central unit of study. Based on the existing literature, the conceptual model for the case study focused on exploring the connections among system- and school-level leadership practices and activities that supported data-driven decision-making. We coded our data based on three broad domains: (1) the identification of leaders of data-driven decision-making; (2) the qualities attributed to leaders; and (3) types of activities leaders engaged in to foster data-driven decision-making. Through an iterative process, we refined the codes before developing individual case reports for each school site and school system by concentrating on how individuals in different leaderships positions (both formal and informal) viewed their roles. Afterwards, we analysed similarities and differences between schools within a single school system before conducting cross-site analysis.

Findings

The practitioners in this study were situated in school systems that emphasised the use of data as a key improvement strategy. As a result, the systems built support structures and policies to develop teacher ability to use data for decision-making in order to improve instruction and learning. A great deal of resources and strategic planning were designed to increase capacity at the system and school levels for using data. We find that leaders and leadership practices centre on creating and maintaining an ethos of continuous improvement, building capacity through modelling and learning, distributing decision-making practices, and distributing best practices though knowledge brokering. Below we discuss the findings in each of these areas in depth.

Creating a ethos of learning and continuous improvement

Establishing a culture of data use was a critical component of each system's efforts and leadership at all levels were critical to fostering a culture of continuous inquiry. School systems created explicit norms and expectations regarding data use at the system and school levels. Central office administrators and school-level leaders framed the use of data-driven decision-making in a manner that allowed room for principals and teachers to learn from their mistakes. They tried to present data in a non-evaluative manner and created an atmosphere around data that would gain buy-in from different staff members. For instance, instead of blaming a teacher or a

school for poor performance on the tests, system leaders focused on examining the data (e.g. 'perhaps something is wrong with the benchmark results so let's look at the data district-wide') versus placing blame.

Part of using data effectively required developing a process where data are discussed openly without fears of repercussions. The Adams District's superintendent admitted that this took 'courage' and so framed data not as a game of 'gotcha, you're doing a poor job', but an acknowledgement that instructional strategies for groups or specific students were not effective. As noted by this superintendent, staff members needed to 'trust that their world would not end if their data were bad, or if they knowingly made a bad decision'. Furthermore, gaps evidenced by tests were addressed in a manner that invited help from the district and school-level colleagues. One central office administrator from the Gates District recalled telling principals, 'Tell us what tools we've given you, they may not be adequate tools. We need to shore them up.' Part of the rationale for this approach was to build a sense of mutual support and trust between the district and the school. Central office administrators in our study believed that teacher and principal buy-in to the concept of data-driven decision-making was critically important, and their support needed to be carefully nurtured. At multiple levels, practitioners expressed the belief that data need to be dealt with in an environment filled with trust in order to build an ethos of continuous improvement.

In alignment with the system, school site leaders also took up the task of fostering a culture of continuous improvement through data use. Principals became adept at conveying the district's message about how to approach data. One principal at Gates District told her staff that data serve as a resource for asking questions and making improvements. She shared that when a teacher expresses sentiments such as, 'this is so depressing, I worked so hard, and these are my scores', she responds with, 'Don't go there. Don't look at it that way. What we need to do then is to say, okay, what can we do differently next time?' Principals tended to view themselves as instructional leaders and as supporters of teacher development. One teacher at this system recalled that the first time the data management system was introduced, the principal offered to print out the reports for teachers. With a second request, the principal was known to say, 'I'll show you how'. And then the next time, the principal might say, 'Why don't you do it. And let me know if there are any problems.' One principal remarked, 'You have to take it step-by-step because if you don't, you can send people over the edge ... and burn them out'.

Building capacity through modelling and learning

In addition to creating high expectations for both teachers and students, administrators across these school systems acted as instructional leaders and attempted to model effective use of data. Modelling best practices was seen as a large part of the school systems' strategy to build human capacity. Central office and instructional coaches modelled strategies around data for principals and teachers, especially

concerning having productive conversations on examining and using data. In most cases, school sites also had their own established leadership teams, consisting of both administrators and teachers, which acted as a main source for building staff professional capacity. These team members usually facilitated conversations around data and helped teachers translate data into action plans. The monitoring of student performance and analysis of data were framed not as auxiliary duties or distractions, but rather as central tools for improving instructional practices and learning. Therefore, a great deal of professional conversation and meeting time focused on student data.

All of the school systems provided ongoing professional development support to educators in the area of data-driven decision-making, as well as more generally. Professional development regarding data management systems and data use was an important strategy for building people's capacity in all four school systems. Much of this support was provided by central office staff. The training typically took place in conjunction with the adoption of a data system or a set of new practices, and training was also made available to all new teachers at the beginning of the school year. For example, new teachers in Achieve CMO schools received one day of training in data use, which involved grading a mock interim assessment, conducting data analysis, and then participating in a mock conversation with the principal about their six-week instructional plan. Across all four school systems, ongoing training was also available to anyone who asked for it. Gates even had a tutorial on its data management system posted on the district's website. The CMOs tended to provide most of the professional development training in-house, whereas the districts did a combination of in-house and outsourced trainings.

There was an explicit expectation that staff members bring any knowledge or expertise they have gained from professional development to the rest of the staff. For example, at Gates, the site leadership team received training from the district on how to analyse state test results using a protocol. Then a portion of this team conducted training and modelled the protocol with the rest of the school staff. Thus, the districts seemed to focus on developing site-level capacity by using district or external resources sparingly to train a small number of school staff, then expected those staff members to train their colleagues.

School site leaders also perceived their role as facilitating and modelling data use. They were uncomfortable about mandating changes and expressed similar senti-ments about the importance of getting staff buy-in. 'You can't just walk around and say to teachers, 'You must do this', one principal at Gates remarked, 'Because they have to have that buy-in of understanding. And I think it's my job to make sure that I facilitate it.'

Several educators also stressed the importance of creating norms and rules for discussions about students, so that the level and type of discussion would not deteriorate into inappropriate 'nit-picking or trash-talking'. When asked about how the school established such expectations for educators, several teachers indicated that positive 'peer pressure' was important and that productive facilitation of discussion to keep conversations on track was necessary. Often, school leaders set formal

expectations for how meetings regarding data would be conducted. They took time to cover such issues as how to behave in meetings, what materials teachers and principals were expected to bring to meetings, what not to bring (e.g. papers to grade), and how to compile data binders. While these types of concerns seem very basic, educators indicated that these discussions helped set the tone for account-ability among the staff members and ensured that meetings were purposeful. Therefore, in conjunction with gaining buy-in from staff members, many schools strategically attempted to nurture high expectations for mutual accountability among the staff.

Informally, leadership team members and other teachers at school sites became 'data experts'. Across all of the school systems, teachers named one or two peers to whom they specifically turned to assist them with using the data system with things like inputting results, analysing results and creating reports. Many of these teachers took the initiative to learn how to gather and analyse data – ultimately for the purpose of sharing their knowledge with the rest of the staff. In Innovate CMO schools, lead teachers took informal roles to assist in data use. Gates District also trained teams of teachers from each school who serve as leaders regarding data-driven decision-making. They also had teachers on special assignment working at the district level on issues related to data use, and two full-time district staff dedicated to assisting schools in this effort.

In most of these school systems, direct aid was provided to struggling teachers. In fact, leaders often believed that it was incumbent upon them to support and instruct staff members who were uncomfortable accessing or utilising data. Administrators might hand out copies of the electronic information until individuals become more adept at using the system. In some cases, the leadership team facilitated the use of data by breaking down data by grade level or by classroom as needed. Lead teachers and coaches might also conduct the analysis for teachers and then visit a teacher's classroom to model a lesson. In sum, district and school leaders not only modelled high expectations and professional accountability, but also took responsibility to build data-driven decision-making capacity directly within their schools.

Distributing decision-making practices

Besides cultivating a culture of continuous improvement and building capacity for data use, decision-making authority was spread over several levels and various groups to enable people to act on data. Rather than sharing decision rights within the same decision-making domains (e.g. resource allocation, curriculum or programmes), various individuals and groups took on different tasks. The school systems in our study centralised certain aspects of decision-making while de-centralising others. As part of engaging in data-driven decision-making, districts often create a closer alignment between the curriculum and state standards. The school systems developed centralised student performance goals and mechanisms for monitoring progress towards benchmarks. This involved creating benchmarks and standards for

each grade level. All systems in our study implemented regular assessments throughout the school year in order to make sure that student progress towards standards was regularly monitored and that instructional adjustments were made accordingly. Two of the systems (Adams District and Innovate CMO) in the study also used scorecards as a management tool to monitor and measure the progress of schools as well as to assist districts and school in aligning their goals.

Central office leaders also took the main responsibility for developing capacity to use data in order to inform instructional improvements. There was an overall sense that the central office was becoming more of a 'support and opportunity provider' to the schools. The Gates superintendent commented on their perspective: 'In our minds, we see that as our job to say, here, we've done the homework for you to find out who are the best people out there to address this kind of issue.' That is, they arranged professional development at the request of schools, provided additional materials for instructional improvement, and mediated between schools and external providers.

While the school systems took the bulk of the responsibility in aligning resources and goals and providing support, schools were responsible for producing intended outcomes. School leadership teams held the responsibility for choosing and implementing instructional practices that would best serve their students. This flexibility was founded on the premise that in order to make the use of data meaningful and relevant to the day-to-day school improvement efforts, school-level administrators and staff need to have the authority to make changes if it was evidenced by the data.

Although the configuration and types of responsibilities varied by each school site, all schools in our sample had leadership teams that were pivotal to supporting and leading staff in making decisions around data. Typically, each formal team consisted of the principal, assistant principal, data management support staff, coaches and grade-level representatives. At all school sites, leadership teams were critical to building capacity for facilitating conversations around data as well as translating data into action plans. At one Innovate CMO school, the lead teachers were privy to their team members' professional development goals and student data since one of their main duties is to monitor and support teacher progress. Schools in three of the systems had the flexibility to make programme decisions. At one Adams District school, the leadership team used data to determine whether to maintain a Saturday intervention programme. After comparing data, they decided that resources could be better utilised to hire additional support staff to work with small student groups during instructional hours. With the charter management organisations, the system supported schools much like a district would (e.g. generating a budget). However, principals had the flexibility to determine their own calendars, professional development, school policies, and also had hiring and firing powers.

Teachers were also given the authority to make instructional and programme decisions. One principal expressed the belief that, in order for data to be used to make improvements, teachers had to feel empowered about their own abilities to bring about change. The systems worked hard to empower educators to use data to

inform instruction at the school level. The key strategies they undertook to empower educators were investing in professional development, scaffolding data use through staff support, providing time for collaboration, and networking educators to share data and strategies. Within all grade-level teams, there was flexibility in how instruction was structured and in three of the four systems teachers also had some degree of autonomy over their classroom curriculum. For example, after assessing student achievement data and the relative strengths of individual teachers, one grade-level team decided to reorganise classes based on specific subject matter content areas and the developmental needs of students.

Distributing best practices through knowledge brokering

The school systems we studied also supported their schools by establishing time for teachers to learn from one another both within and across sites. School leaders saw themselves as models in terms of leading conversations around data but also saw themselves as knowledge brokers. That is, they saw part of their duty as connecting teachers to one another in order to exchange knowledge and expertise. One administrator observed that the key to making data relevant was developing working relationships between staff, because 'without collaboration and collegiality, data is impossible'. Teachers relied heavily on one another for support, new instructional strategies and discussions on data. In fact, participants across all systems and levels we spoke with stressed the importance of having built-in collaboration time; this was seen as a crucial factor in developing mutual trust between educators and for sharing knowledge to improve practice. A common sentiment was that 'you can't do it alone'; in fact, 'we do it together' was a common refrain across many of our conversations with teachers.

Most of the school systems devoted frequent and substantial time to reviewing data and planning accordingly. The Adams District and Innovate CMO not only had weekly structured data discussion times, but teachers also had daily instructional planning time within grade levels or partner teams. The ways in which schools structured time around data discussions were probably the most important scaffolding for continuous improvement. Most schools had early dismissal for students in order to provide two to three hours of uninterrupted time for data discussions. At Innovate CMO, teachers also had daily preparation time (50 minutes every day for fourth-/fifth-grade teachers). As noted by the principal, 'it's better to have well-planned instruction than just have [kids] in the room'. Additionally, there was built-in time for discussions around data and instruction. At least once a month, two meetings were devoted to team data discussions. Another meeting was set up for similar discussion between instructional coaches and teams. The last meeting of the month was used by the principal, leadership team and coaches to look at data together to decide which teachers needed instructional support or which students needed intervention.

All of the school systems recognised that data-driven decision-making was enhanced when educators shared data not only within schools but across them.

These interschool networks helped to strengthen connections and spread innovation across sites. While most data discussions still occurred at the school level or between an individual school and the central office, the districts and CMOs we studied were attempting to structure data discussion across schools. Each of the school systems was at a different level of maturity in the development of cross-school networks, with some having had network structures in place for some time, and others just developing formal connections. In general, the configurations themselves seemed to be less important than the collaborative relationships that were developing within them.

Adams District, for example, had a series of both 'vertical' and 'horizontal' meetings of schools in its district. There are five 'verticals' in the district, each of which was overseen by an area superintendent. Each vertical consisted of one high school and the intermediate and elementary schools that 'fed' into it – typically 12–14 schools in all. Vertical meetings were used to look at student data from elementary through high school; as the superintendent explained, 'we're trying to get them all to accept responsibility for what happens at the high school'. One Adams principal indicated that she worked very closely with the other six elementary schools in her vertical and shared ideas all the time. The 'horizontal' meetings consisted of principals from across all pre-K–12 schools and were used for training and disseminating information.

Gates District used 'Action Walks' to assess the implementation of programmes. Schools were formed into triads that rotate site visitations. The principal, data team and leadership teams visited one another with an implementation checklist. This process was used primarily by the district to ensure consistency of curriculum implementation. However, leadership teams also viewed these activities as opportunities to monitor the progress of their own schools and learn from other school sites. A copy of the district Action Walk checklist follows. Next, the principal and teachers at one school refined the checklist further and created their own tool, which appears following the district Action Walk tool.

Being smaller in size, the two CMOs seemed to find it easier to facilitate cross-school communication. Innovate CMO, for example, was organised so that schools met regularly with other schools within their regional cluster. The chief academic officer at Innovate described her region of schools as 'a pretty tight team' that meets frequently and relies on each other. Networks across schools seemed to be established mainly through Aspire-sponsored meetings in which all leadership team members participated. Because of the relationships they developed in this way, principals shared information informally with each other. Achieve CMO primarily connected leaders during principal retreats and regular Saturday meetings, which were used to share data and exchange best practices. For instance, during one recent retreat, a principal from one Achieve school noticed that another school had higher attendance rates. When they broke into smaller discussion groups, they shared ideas and strategies for improving attendance.

Most educators highlighted their desire to learn from other educators across school systems. One principal revealed that she herself would like more professional

development – specifically, someone who could be a coach or a critical friend. Teachers, too, desired more opportunities to observe other schools and learn from other teachers in order to build a broader repertoire of instructional strategies from which to choose. Some teachers specifically mentioned that they would like to see more examples of how schools were conducting data conversations.

Limitations – the importance of context

It is important to recognise that this study is a snapshot of how school systems are leading change efforts rather than an investigation of change over time; thus, the school systems were still grappling with several challenges. For example, nurturing and maintaining buy-in continued to be a source of tension for all the sites. While the majority of the educators across the systems seemed to embrace the use of data, many school system leaders noted that there were pockets of resistance among some teachers and principals. With regard to testing, one Adams principal explained, 'We see assessment as part of the instructional process, it's not an interruption. But you have to have a balance so that teachers don't see it as an interruption.' In the two school districts in particular, lack of buy-in was also attributed to a large wave of reforms and programmes implemented all at once. For example, at Gates, the Data Director system was less than two years old, and people were still becoming familiar with it. The district-created quarterly benchmark assessments were also new, as curriculum-embedded chapter tests for math and language arts had been used as benchmark assessments the previous year. In Adams, staff members at school sites commented that faculty needed time to adjust to the changes, and to implement new processes and strategies. One assistant principal noted that buy-in is still a huge issue, as teachers struggled to use the relatively new data management system. She shared that, although all the district-driven changes were 'excellent, right now what we have to do is to not have any more changes. Let us get better at what we're doing now.' District teachers also mentioned that one of the main challenges was deciding when to re-teach, how to re-teach and whom to re-teach, especially given the constraints of the pacing plan.

The CMOs also continue to struggle with teacher buy-in, but for different reasons. A tension seemed to exist between allowing teachers the flexibility and autonomy that attracts them to charter school environments, while also maintaining instructional and data consistency. Young, energetic teachers are often attracted to the opportunity of working in innovative charter schools; however, they also had to be trained in using data effectively at the same time as they were learning to be effective teachers more broadly, and so training was an ongoing process.

One principal noted that comparing data from classroom to classroom was difficult when teachers were not using common tests to assess student progress. The principal wondered how much she should mandate and asked herself: 'If there is no uniformity, how do you systematically measure exactly what teachers do?' The principal in one Innovate school believed that some teachers were still uncomfortable

with the home office's requirement to use the data analysis protocols and explained that some 'people felt it was somewhat of a mandate and a little bit paper-heavy'. The hope was that teachers would see the value gained from having discussions about uniform data and assessments, as this would facilitate group action planning. A teacher in one Achieve school shared that while some staff members at her school really valued data and stressed the importance of performing well on tests, other teachers would prefer that students participate in more engaging activities. She believed that data can be handled in two different ways: 'Either we're going to work really hard so the data is good or we work really hard, therefore our data is good.' In other words, she believed that data can become the end goal or an indicator of progress and effort.

Overall, local and system context was integral to how educators work with and lead with regard to data. While the districts and CMOs experienced similar successes and challenges, they also had to deal with issues that were unique to their own organisations. The history, the size and the system's missions all played a role in determining how leaders went about implementing data-driven decision-making.

Conclusion and implications

In this paper our purpose was to examine leadership practices in the context of data-driven decision-making using distributed leadership as a framework. The distributed leadership framework enabled us to expand our notion of leadership and leadership practices so that we went beyond the confines of institutional leadership. The perspective shed light on the importance of investigating not just leaders but also leadership activities. Additionally, the practices and processes of leading for school change within the context of a social system are critical to how reform occurs.

Our findings indicate that data-driven decision-making is co-constructed by multiple actors at both the school and district level. First, leaders at all levels co-constructed the vision and implementation of productive data-driven decision-making. Leaders, both informal and formal, played a pivotal role by helping to positively frame the purpose of using data. They did so by focusing on creating an ethos of learning and continuous improvement rather than one of blame. Second, in order to give data relevancy, leaders also distributed decision-making authority in a manner that empowered different staff members to utilise their expertise. From the system perspective, teachers were not necessarily granted full autonomy; rather, they were responsible for developing effective instructional practices while the central office held themselves accountable for providing resources and developing learning opportunities. Third, the school system directed their resources on building human and social capacity mainly by focusing on modelling and knowledge brokering amongst their staff.

As Leithwood and Riehl (2005) explain, leaders create conditions to improve student achievement by developing human capacity. In this study, we saw how leaders at multiple levels – district, school and classroom – developed teachers' capacity for data-driven decision-making with ongoing professional development

targeted to their needs and modelling desired behaviours. We can see that indeed leadership is a collective enterprise (Gronn 2000; Spillane et al. 2004) as super-intendents, principals and teachers work together in this reform effort. The study reported here adds to the knowledge base on distributed leadership in that it opens up the 'black box' of the daily work of leaders as they work together to use data to inform decision-making. Critical to this joint work was the building of a culture of continuous improvement, which is indeed a distributed activity (Bennett et al. 2003). The findings of this paper provide empirical evidence of what distributed leadership looks like, not just at the school level but at the district level as well (Spillane et al. 2004). Finally, the findings point to the delicate balance that is required as systems provide leadership and systemic supports, yet also provide enough flexibility at the local level so that educators feel empowered and able to innovate within the context of the data-driven decision-making reform effort.

Our study suggests several implications for research. As noted previously, much remains to be investigated on how distributed leadership is played out in educational systems. Our key premise is that besides looking at the school itself as a system, the district also plays a pivotal role in how leadership becomes enacted at the school site. While this study provides some insights into how districts and schools work in concert to implement data-driven decision-making, further research is needed in this area. It would be fruitful to further examine how the district context shapes distributed decision-making practices at the school level, much in the way we have attempted to do so here. Additionally, because our data represent only a snapshot of the school systems, a longitudinal study on how leadership practices evolve over time as well as their consequences might be particularly useful. Finally, we did not have the opportunity to investigate the extent to which these leadership practices are affecting student achievement and equity. The purpose of leadership research is to examine the extent to which it helps to improve learning and produce equitable student outcomes. Thus, it would be critical to understand what roles students play in these school reform efforts.

Notes on contributors

Vicki Park is assistant project scientist in education studies at UCSD and the director of research of the Pathways to Postsecondary Education Plus project. Her research broadly focuses on the impact of accountabilty policies on urban schools, student engagement, and the ways in which class, race, and gender shape the academic development of low-income youth.

Amanda Datnow is professor and director of education studies at UCSD. Her research focuses on the politics and policies of school reform, particularly with regard to professional lives of educators and issues of equity. She has conducted prior studies on district-wide reform, comprehensive school reform, and on the intersection of gender and educational reform.

References

Alwin, L. 2002. The will and the way of data use. *School Administrator* 59, no. 11: 11.

Anderson, S. 2003. *The school district role in educational change: A review of the literature*. Ontario: International Centre for Educational Change, Ontario Institute of Studies in Education.

Armstrong, J., and K. Anthes. 2001. *Identifying the factors, conditions, and policies that support schools use of data for decision making and school' improvement: Summary of findings*. Denver, CO: Education Commission of the States.

Bennett, N., C. Wise, P. Woods, and J. Harvey. 2003. *Distributed leadership*. Oxford, UK: National College for School Leadership.

Center on Education Policy. 2004. *From the capital to the Classroom: Year 2 of the No Child Left Behind Act*. Washington, DC: Author.

Cromey, A. 2000. *Using student assessment data: What can we learn from schools?*. Oak Brook, IL: North Central Regional Educational Laboratory.

Datnow, A., V. Park, and P. Wohlstetter. 2007. *Achieving with data: How high performance driven school systems use data to improve instruction for elementary school students*. Report for NewSchools Venture Fund.

Doyle, D.P. 2003. Data-driven decision-making: Is it the mantra of the month or does it have staying power? *T.H.E. Journal* 30, no. 10: 19–21.

Earl, L., and S. Katz. 2006. *Leading schools in a data rich world*. Thousand Oaks, CA: Corwin Press.

Elmore, R.F. 2000. *Building a new structure for school leadership*. Washington, DC: Albert Shanker Institute.

Elmore, R.F. 2002. Hard questions about practice. *Educational Leadership* 59, no. 8: 22–5.

Firestone, W.A., and C. Riehl. 2005. *A new agenda for research in educational leadership*. New York: Teachers College Press.

Firestone, W.A., and D. Shipps. 2005. How do leaders interpret conflicting accountabilities to improve student learning. In *A new agenda for research in educational leadership*, eds. W.A. Firestone and C. Riehl, 81–100. New York: Teachers College Press.

Fullan, M. 2001. *Leading in a cultural of change*. San Francisco: Jossey-Bass.

Gronn, P. 2000. Distributed properties: A new architecture for leadership. *Educational Management and Administration* 28, no. 3: 317–38.

Gronn, P. 2003. Leadership: who needs it? *School Leadership and Management* 23, no. 3: 267–90.

Harris, A. 2007. Distributed leadership: Conceptual confusion and empirical reticence. *International Journal of Leadership in Education* 10, no. 3: 1–11.

Harris, A., K. Leithwood, C. Day, P. Sammons and D. Hopkins. 2007. Distributed leadership and organisational change: reviewing the evidence. *Journal of Educational Change* 8, no. 4: 337–347.

Hallinger, P., and R.H. Heck. 1996. Reassessing the principal's role in school effectiveness: A review of empirical research. *Educational Administration Quarterly* 32, no. 1: 27–31.

Lafee, S. 2002. Data-driven districts. *School Administrator* 59, no. 11: 6–7, 9–10, 12, 14–15.

Leithwood, K., and D. Jantzi. 2000. Principal and teacher leadership effects: a replication. *School Leadership and Management* 20, no. 4: 415–34.

Leithwood, K.A., and C. Riehl. 2005. What do we already know about educational leadership? In *A new agenda for research in educational leadership*, W.A. Riehl and C. Riehl (eds.), 12–27. New York: Teachers College Press.

McIntire, T. 2002. The administrator's guide to data-driven decision making. *Technology and Learning* 22, no. 11: 18–33.

Murphy, J., and A. Datnow (eds) 2003. *Leadership lessons from comprehensive school reforms*. Thousand Oaks, CA: Corwin Press.

Petrides, L., and T. Nodine. 2005. *Anatomy of school system improvement: Performance-driven practices in urban school district*. San Francisco, CA: NewSchools Venture Fund.

Prestine, N.A., and B.S. Nelson. 2005. How can educational leaders support and promote teaching and learning? New conceptions of learning and leading in schools. In *A new agenda for research in educational leadership,* W.A. Riehl and C. Riehl (eds), 46–60. New York: Teachers College Press.

Schunk, D.H. 2004. *Learning theories: An educational perspective*, 4th ed. Upper Saddle River, NJ: Pearson Education.

Stein, M.K., and J. Spillane. 2005. What can researchers on educational leadership learn from research on teaching? Building a bridge. In *A new agenda for research in educational leadership*, W.A. Riehl and C. Riehl (eds.), 28–45. New York: Teachers College Press.

Supovitz, J., and B.S. Taylor. 2003. *The impacts of standards-based reform in Duval County, Florida 1999–2002*. Philadelphia, PA: Consortium for Policy Research in Education.

Tognieri, W., and S. Anderson. 2003. *Beyond islands of excellence: What districts can do to improve instruction and achievement in all schools*. Washington, DC: Learning First Alliance.

Wohlstetter, P., A.N. Van Kirk, P.J. Robertson, and S.A. Mohrman. 1997. *Organizing for successful school-based management*. Alexandria, VA: Association for Supervision and Curriculum Development.

Yin, R. 2003. *Case study research, 3rd ed*. Beverly Hills, CA: Sage Publications.