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Instruction, Equity, Social Networks, and District-Wide Improvement

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Instruction, Equity, Social Networks, and District-Wide Improvement

The more focused the superintendent is on teaching and learning, the more focused the district will be on teaching and learning – Negroni (2009)

The idea that superintendents, principals, and other district administrators should be "instructional leaders" seems so obvious today that it is hard to remember that instruction has often received short shrift in work on educational leadership. However, over the past twenty years, educational reform efforts have increasingly highlighted that education leaders need to broaden their work from an emphasis on more traditional modes of managing, monitoring, and evaluating schools to direct engagement in strengthening the "instructional core" – the relationship between students, teachers, and content" (Cohen & Ball, 1999; Elmore, 2002, 2007).

While there are numerous definitions and approaches to instructional leadership, (e.g. Coldren & Spillane, 2007; Cuban, 1988; Hallinger & Murphy, 1985; Hallinger, 2003), in general, instructional leaders focus on making and sustaining connections to the instructional core that are intended to lead to the improvement of instruction and student learning (Coldren & Spillane, 2007). A host of approaches and activities have been pursued to help leaders and the members of their schools and districts to focus on instruction, but structured classroom observations by groups of administrators and school staff have been among the most prominent (e.g. City, Elmore, Fiarman, & Teitel, 2009; Downey, Steffy, English, Frase, & Poston, 2004; Fink & Markholt, 2011; Fink & Resnick, 2001; Marzano, 2011).

These visits include approaches like "instructional rounds" and "walkthroughs" which generally involve relatively brief group observations in a sample of classrooms

within a school. Following the observations, observers meet to share their impressions and reflect on what they saw. Participants may provide specific feedback to the teachers they observed or to other members of the staff, but the rounds are also designed to enable the participants to develop their own understanding of instruction and to inform their own future work. In this way, instructional rounds echoes the dual purposes of rounds in teaching hospitals which provide expertise and feedback that can improve patient care and serve as teaching and learning opportunities for the interns, residents, and doctors involved (Roegman & Reihl, 2012).

Rounds and walkthroughs vary along a number of different dimensions including who participates, what procedures they follow, and what kind of feedback and follow-up they provide; but many share a common theory of action that highlights three potential benefits of involvement of administrators in rounds networks that in turn can contribute to improvement in instruction (City et al., 2009). These include the development of 1) a common language and a common understanding of high-quality teaching, 2) a collaborative learning culture rather than a culture of compliance, and 3) a more systemic and coherent approach to improving instruction.

While there is relatively little research focused directly on testing the extent to which either rounds and walkthroughs do produce these effects and whether those developments in turn lead to more effective instruction, evaluations of rounds networks so far suggest that participants often show high satisfaction with the process; greater willingness to engage in collegial learning; and increases in understanding of the instructional core (Roberts, 2012; Tanney et. al., 2010). Other researchers have also reported that these kinds of practices can contribute to the development of a shared

understanding of high-quality practice (Coburn, Honig & Stein, 2009) although these and the other benefits may accrue primarily for those administrators and others who carry out the observations, rather than the teachers who are observed (David, 2007; Marsh et. al, 2005).

While the precise mechanisms through which rounds and walkthroughs might exert an effect has not been fully explored, in addition to the focus on classroom practice the collective nature of the activity are often highlighted as critical attributes of rounds and walkthroughs. Thus, rounds can disrupt traditional patterns of interactions among those involved (Roberts, 2012), and can create opportunities for individuals who often work on their own to engage together in tasks like observing and reflecting on classroom practice, taking notes, and producing feedback presentations and reports. In turn, these mutual engagements enable the individuals to share information, ideas, and expertise, and, ideally, to develop connections and relationships that can extend beyond the classroom visits themselves. In the process, activities like rounds create the potential to develop a more extensive social network amongst participants as well as to develop the kind of shared understanding and shared purpose that characterize communities of practice (Lave & Wenger, 1991; Wenger, 1998). Rather than seeing the development of these kinds of relationships and common understanding as an end in themselves, consistent with work on communities of practice, the efforts to focus on instruction are presumed to create a foundation for productive, collaborative work. As such, rounds and other efforts to focus collective attention on instruction can be seen as a key mechanism for building the capacity for making many of the instructional and organizational improvements that are needed to increase student learning.

While numerous schools and districts around the country are engaged in rounds, walkthroughs and related efforts, this basic theory of action remains underexplored. In particular, there are some indications of potential complications that could, if unaddressed, hamper the power of these kinds of initiatives. For example, the limited research to date suggests these initiatives are unlikely to be effective and may be counter-productive unless many key conditions are already in place: the purpose needs to be clear; observations need to be carried out in a climate of trust; and everyone involved needs to understand how the observations connect to other improvement efforts (David 2007). Thus, these initiatives may provide another instance where "it takes capacity to build capacity" (Hatch, 2001). Since many low-performing schools and districts do not already have these conditions in place, these kinds of initiatives may not be an appropriate strategy in many of the sites that are in greatest need of improvement.

Furthermore, while the theory of action behind many rounds initiatives suggests they can be a vehicle for improving the performance of all students, relatively little research has focused on the ways in which increasing focus on instruction in general might intersect with efforts to address specific issues of equity. In one of the few studies to address this question, Roberts (2012) found that issues of race were rarely raised through the rounds process, and when they were raised, the group as a whole generally disregarded them. In fact, many district strategies for addressing issues of equity that have been examined include structural responses (such as de-tracking) or the allocation of resources (creating new programs, extended day options, etc.) both of which can be carried out without actually affecting the instructional core (Cohen & Ball, 1999; Elmore, 2002, 2007). Our own research in a small set of districts that are engaged in a variety of

approaches to instructional rounds suggests that without an explicit focus on equity, rounds efforts in general are unlikely to contribute directly to the development of the relationships and common understanding that can support the development of more equitable outcomes for all students (Hatch & Kliegman, 2012).

In order to begin to examine the role that initiatives like rounds and walkthroughs might play in developing the capacity to improve instruction in general and to produce more equitable outcomes in particular, in this paper, we report on our effort to track the development of the relationships and social networks in three of the districts that are participating in this group of superintendents. The superintendents in this group meet on a monthly basis in order to engage in instructional rounds together and to try help one another focus their organizations on improving teaching and learning in order to create excellent and equitable outcomes for all their students. In addition, each of these three districts has developed their own independent, approaches to instructional rounds. It is the rounds work in each district and the networks of relationships in each district that are the focus of this study. Specifically, we are exploring how the social networks among administrators in each of these districts are evolving over a two-year period; looking at the relationship between participation in rounds and understanding of district initiatives and the evolution of the social networks; and comparing the development of social networks focused on instruction and the networks focused on equity.

Conceptual Framework

This study builds on recent research that suggests that building the capacity for improving instruction for all students depends on the development of technical, human, and social capital. Technical capital refers to investments in physical materials and

resources, equipment, technologies, and structures; human capital reflects investments in the development of the skills, knowledge, and dispositions of the people involved; and social capital refers to investments in social relationships that provide access to additional resources (Bourdieu, 1986; Cohen & Ball, 1999; Coleman, 1988; Corcoran & Goertz, 1995; Daly & Finnigan, 2010a; Newman, King & Youngs, 2000; Lin, 2001; Putnam, 2000; O'Day, Floden, & Goertz, 1995; Spillane, Hallet, & Diamond, 2003; Spillane & Thompson 1997).

Social capital plays a particularly critical role in building capacity because the connections between people serve as the conduits through which other types of capital flow, including resources and knowledge (Daly, 2012). Furthermore, developing social connections and sharing resources and knowledge, in turn, helps to develop common understandings, foster collective expertise, and coordinate work. These social connections also create opportunities for mutual engagement and shared experience that are central to the development of communities of practice: groups of people who engage in collective learning through shared work (Lave & Wenger, 1991). However, participation in a community of practice not only supports learning of particular skills it also creates opportunities to take on the roles and identities that are characteristic of that community. As Lave (1991) explains:

> Learning is recognized as a social phenomenon constituted in the experienced, lived-in world, through legitimate peripheral participation in ongoing social practice; the process of changing knowledgeable skill is subsumed in processes of changing identity in and through membership in a community of practitioners (Lave, 1991, p. 64).

In addition to fostering the development of skills and identity, the constant negotiation of meanings that comes with participating in everyday social interaction encourages individuals to make changes so that their "way of doing things" is more consistent with other members of the group (Keating, 2005, p. 108).

Crucially, the development of social connections and a community of practice can then serve as the basis for further strengthening and expanding social relationships (Bryk & Schneider, 2002; Louis, Kruse, & Marks, 1996; Putnam, 2000; Stoll & Louis, 2007). This self-reinforcing quality of social capital helps to explain why "it takes capacity to build capacity": schools that already have a strong foundation of social relationships are more likely to use their human and technical capital more productively (Hatch, 2001, 2009). By this logic, districts that have a strong network of relationships, particularly around instruction, should have a solid foundation for developing and carrying out initiatives for improving classroom practice as well as for the development of relationships around other kinds of organizational improvement efforts.

Applying these ideas to schools and districts suggests that as administrators mutually engage in common work, such as instructional rounds, they can make social connections, develop a shared repertoire of practices for observing and reflecting on instruction, and build their observational skills. Through mutual engagement, the administrators may also develop a common language around instruction as well as a shared understanding of the purpose of engaging in rounds and a common sense of what they should be looking for and seeing across classrooms. As new administrators join the district, participation in rounds and walkthroughs with peers may also enable them to learn what it means to be part of the district and to engage in the work of an

administrator. In turn, the development of the productive relationships, common language, shared understanding, and collective identity can create a foundation for work on other improvement initiatives.

Despite the important role social relationships and professional community play in schools, a review of recent studies of superintendents' efforts to address issues of equity reveals a focus on the distribution of technical and human capital: emphasizing allocating resources and personnel (funding, supplies, and teachers) and creating equal opportunities for students (e.g. by placement of previously excluded students in advanced classes or by de-tracking) (Alsbury & Whitaker, 2006; Childress, Doyle, & Thomas, 2009; Peterkin, et al., 2011). However, work that focuses on leadership for social justice highlights the need for leaders to work on developing relationships and fostering communication and discussion across their organizations as well. These relationships can facilitate the development of new meanings and shared understandings that support practices that address issues of equity and diversity (Riehl, 2000). Conversely, leaders can actually inhibit work on equity if they promote discussion of and attention to diversity but do not connect that work to work on instruction (Capper, 1993).

Similarly, failure to develop social relationships and communication patterns that allow for the development of shared beliefs and understanding can also undermine efforts to allocate or re-allocate educational resources and opportunities more equitably. Notably, efforts to de-track schools have been blocked on numerous occasions when they failed to address or reshape underlying beliefs and expectations about students' abilities (Cooper, 1996; Riehl, 2000; Wells & Oakes, 1996). Thus, while the development of social relationships and a community of practice can be a key resource for developing the

capacity to improve instruction and student learning, networks of relationships around issues of equity may be weak, even if networks of relationships around issues of instruction are strong.

Purpose of this Study

Building on this conceptual framework, in this paper we explore the role that instructional rounds may play in the development of the relationships needed to build the capacity for improving instruction and addressing issues of equity. Specifically, we examine the extent to which three districts that have been engaged in rounds are developing the kinds of "distributed" networks that might be characteristic of communities of practice, and we explore the extent to which the social networks of relationships that focus on teaching and learning may be distinct from networks of relationships focused on issues of equity.

To answer these questions, we use social network analysis to document how the networks of relationships in three districts evolve over a two-year period. Social network analysis provides a way "to frame, map, and quantify the relations between people" (Maroulis & Gomez, 2008) by focusing on the ties between people within a network. It also provides one avenue for mapping and exploring how relationships develop and how they facilitate the flow of knowledge and resources throughout organizations (Daly, 2012**;** Nahapiet & Ghosal, 1998). The primary focus of social network analysis in educational leadership has been on examining how social networks constrain or enable the flow of resources, knowledge, beliefs, and so on, across a school district (Daly, 2012). In particular, the pattern or map of ties between the different district administrators reflects the "social structure" underlying access to different types of resources and

knowledge. Thus, a social network map that shows that many individuals are not connected (a network that has high levels of "fragmentation") or that individuals are quite far away from one another suggests that information and knowledge will take a long time to reach some members of the organization, if it reaches them at all. Other key attributes of social networks include the level of density (the frequency of ties) and the level of reciprocity (the extent to which connections are two-way rather than one-way). Work on social networks demonstrates that effective flow of technical and human capital is not just about the number of relationships or the frequency of interactions between individuals within a network, however. Greater frequency (or density) of interactions could lead to weaker performance (e.g. Szulanksi) or the reinforcement of norms that constrain change (Maroulis & Gomez, 2008). An individual's "position" within a social network is also a key element of social network theory. Those who occupy central positions may be more likely to get access to information and resources and may get that information more quickly than those on the periphery of a network. Those who occupy central positions might also be more influential, and more able to make others aware of their views.

For this study, we hypothesized that districts engaged in instructional rounds should be developing what we are calling "distributed" networks: networks that are characterized by relatively low levels of fragmentation, a relatively high degree of reciprocity, and lower levels of centralization. In addition, based on our own work with the districts and our examination of the literature on superintendents and equity, we expected that the networks on instruction and equity might initially be distinct, but might

become more consistent over time as districts sought to focus their instructional improvement efforts on issues of equity.

Methods

To explore the possible connections between rounds and the development of social networks and communities of practice among administrators, this study focuses on three questions:

1.) To what extent are the districts in our study participating in instructional rounds? Has that involvement changed over time? To what extent are understandings of instructional and equity initiatives changing over time?

2.) How can we characterize the instructional networks across the three districts? How have these networks evolved over the two years of the study? To what extent are they becoming more distributed and less centralized? What is the relationship between the development of the instructional networks and involvement/understanding of rounds?

3.) What is the relationship between the networks around instruction and the networks around equity?

In this section, we first provide some background on the superintendents' group and the three districts that are the focus of the study. Then we describe our data collection methods and the social network analyses that we conducted.

Background of the Superintendents' Group

The three districts in this study participate in a superintendents' group that has been holding monthly meetings since 2008-09. During that time, the group has fluctuated

in size from 10-15 members. Eight superintendents (including the three from the districts that are the focus of this study) have been a part of the group since its inception. A design team leads the group and includes the head of a foundation that supports the effort (himself a former superintendent), several consultants with extensive experience working with superintendents and districts in the area, and a documentation team composed of the authors of this paper. Every other month, the group's meeting involves an instructional rounds visit to a school in one of the participating districts. In the rounds visits, the superintendents conduct classroom observations focused around a "problem of practice" and provide feedback to the "host" superintendent. A problem of practice is a question related to teaching and learning that is grounded in evidence, is observable in classroom observations, connects to the school or district's larger strategic plans or goals, and is high-leverage (City, et al., 2009). On alternating months, the Network engages in a variety of different activities designed to engage superintendents in developing their understanding of instruction, identifying issues of equity in their districts that need to be addressed, and developing and refining theories of action to help them work systemically on issues of instruction and equity. While the design team takes responsibility for developing the agenda of each meeting, they do so in consultation with the superintendents and in response to issues superintendents raise. The "host" superintendent defines the problem of practice for the rounds in consultation with a member of the design team.

Despite the group's intention to focus on both issues of instruction and equity, analysis of the transcripts from the first four years of the monthly meetings show that it took some time for equity issues to "get on the table" (Hatch & Kliegman, 2012). Thus,

the meetings during the first two years focused on helping the participants develop their skills in observing classroom practice, with the expectation that the observations and rounds visits would surface issues of equity for discussion. Until the last meeting of the second year, however, issues of equity rarely came up. Furthermore, there were no specific meeting agenda items related to equity, and issues of equity were not central to the "problems of practice" that were a focus of the rounds visits. It was only in 2010-11 (the group's third year of meetings and the first year of the study described in this paper) that the group engaged in a series of activities that were designed explicitly to identify issues of equity in each of the districts. With these changes, equity was explicitly on the agenda in seven of nine meetings in 2010-11. In 2011-12, the fourth year of meetings, issues of equity were on the agenda nine out of ten times. Although no problems of practice associated with the group's rounds visits in the first two years focused on an issue of equity, one out of three rounds visits in the third year and two out of three rounds visits in the fourth year focused on an issue of equity the host school was facing.

Data Collection

To address the research questions and hypotheses about the role that rounds might play in the development of communities of practice and social capital needed to support improved outcomes for all students, we conducted initial social network surveys in the three focus districts during the 2010-11 and 2011-2012 school years. The three districts were deliberately selected from the nine districts that had been a part of the superintendent group from the beginning in to include a range of district demographics in

terms of poverty, students' racial background, and average performance on students' test scores (*see table one*).

Table One: Case Study Districts: Demographics and Average Performance

	Demographics	At or Above Proficient
District One (Exurban District)	Free/reduced lunch: 26% Hispanic: 22% Black: 21% White: 31% Asian: 27%	Grade 3 LAL: 68% Grade 3 Math: 81% Grade 11 LAL: 89% Grade 11 Math: 81%
District Two (Suburban District)	Free/reduced lunch: 18% Hispanic: 5% Black: 44% White: 47% Asian: 4%	Grade 3 LAL: 75% Grade 3 Math: 85% Grade 11 LAL: 90% Grade 11 Math: 79%
District Three (High-Performing Suburban District)	Free/reduced lunch: 3% Hispanic: 5% Black: 6% White: 40% Asian: 49%	Grade 3 LAL: 85% Grade 3 Math: 93% Grade 11 LAL: 97% Grade 11 Math: 95%

Consistent with research that shows the importance of connections amongst those in formal leadership positions within districts (Hightower, Knapp, Marsh, & McLaughlin, 2002; Honig, 2006; Togneri & Anderson, 2003), the survey in each district focused on relationships between and among each district's central office and site based administrators. The survey used a bounded-saturated approach (Lin, 1999; Scott, 2000) that includes all the members of each district's central office leadership team (superintendent, assistant superintendents, directors, supervisors) as well as the principals and assistant principals in each school site. Administrators were asked to complete the survey online (using Survey Monkey) during the summer after the completion of the 2010-11 and 2011-12 school years (referred to throughout the remainder of the paper as

year one and year two of the network surveys). All of the district survey response rates were over 80%.[1]

In order to map the social networks in the district, the survey asked each respondent to describe the frequency with which they talked to each of the other administrators in the district about teaching and learning, issues of equity, about the district theory of action, about the Common Core, about the use of data, and about teacher evaluation. For this paper, we focus specifically on the instructional and equity networks. Consistent with related studies of district administrators (e.g. Daly & Finnigan, 2010a, 2010b), for each network question, the survey asked respondents to describe their frequency of interaction during the academic year on a four-point scale (every two months or so, one or two times a month, once a week, or several times a week).

Measures

For this paper's analyses, we produced measures to capture overall network characteristics; actor-level position in the network; and involvement in and understanding of district initiatives.

Network Measures

We used UCINET to calculate both overall and individual network measures. Consistent with other approaches to social network analysis, we dichotomized the data to include only the most frequent communication ties between actors (Carley & Krackhardt, 1999; Daly & Finnigan, 2010; Krackhardt, 2001). For a tie to be considered "frequent" survey participants had to report that communication took place at least once or twice a month (2 or greater on the rating scale) (Daly, 2012). We then produced measures of

[1] All district survey response rates were over 80%. In year one, District One had a response rate of 90%, District Two had a response rate of 81% and District Three had a response rate of 89%. In year two, District One had a response rate of 87%, District Two had a response rate of 82% and District Three had a response rate of 80%.

overall network *density* – the ratio of existing ties to possible ties; overall network *reciprocity* – the percent of all present ties that are reciprocated (in which both respondents report talking to one another); and overall network *fragmentation* – the proportion of pairs of nodes that are not connected among all the possible pairs of nodes that could be connected (Burk, Steglich, & Snijders, 2007; Snijders et al., 2010). Finally, we produced a measure of overall network *centralization*. This measure captures the degree of centralization in a network expressed as the percentage of a perfectly centralized network of the same size (Hanneman & Riddle, 2005).

We also produced individual-level network measures that describe administrator centrality in the network. While there are various measures that can capture actor-level network centrality (Borgatti, Jones, & Everett, 1998) in our paper we focus on degree centrality *In-degree centrality* can be interpreted as a measure of *popularity* in the network and reflects the number of people who cited the individual as someone with whom they interact (Hanneman & Riddle, 2005). *Out degree centrality* reflects the number of people that the individual reaches out to, and thus can be interpreted as a measure of *influence* in the network (Hanneman & Riddle, 2005).

District Measures

We produced a series of composite measures to capture levels of understanding and involvement in of various district initiatives. All district composite measures were z-scored in the analysis (M=0, SD=1) so that we could discuss our results in terms of effect size (SD) units, and make substantive interpretations beyond statistical significance.

The first series of composite measures were created using factor analysis with varimax rotation and capture the extent to which administrators reported understanding

the purpose of various district initiatives in the survey. We created the same factors for year one and year two. We produced two factors to capture administrator understanding of equity initiatives around the achievement gap and college preparation. *For understanding of achievement gap initiatives*, the factor included measures of the extent to which administrators agreed that 1.) their district had focused specifically on identifying achievement gaps, 2.) their district had developed specific initiatives to address achievement gaps, and 3.) they had a clear understanding of how their district was addressing achievement gaps. The resulting factors had strong reliability in both year one (α =.799) and year two (α =.891). *For understanding of college prep initiatives*, the factor included measures of the extent to which the administrators agreed that 1.) their district had focused specifically on preparing all students for college, 2.) their district had developed specific initiatives to prepare all students for college and 3.) they had a clear understanding of how their district was preparing all students for college. The resulting factors had strong reliability in both year one (α =.882) and year two (α =.815).

We created two factors to capture understanding of district mission, including understanding of district theory of action and understanding of district problem of practice[2]. *For understanding of district theory of action*, the factor included measures of the extent to which the administrators agreed that 1.) their district has a clear theory of action, 2.) they had a clearer understanding of district theory of action this year as opposed to last year and 3.) their district has identified other issues of equity besides the achievement gap and college readiness. The resulting factors had strong reliability in year one (α =.706) and good reliability year two (α =.633). *For understanding of district*

[2] A "problem of practice" states a key issue that serves as a means of focusing observations during rounds visits.

problem of practice, the factor included measures of the extent to which the administrators agreed that 1.) their district has a problem of practice, 2.) they had a have a clear understanding of district problem of practice and 3.) they have a clear understanding of the problems of practice being used in schools in the district. The resulting factors had strong reliability in both year one (α =.851) and year two (α =.751).

Finally we have several measures to capture administrator involvement in instructional rounds. The first measure captures *administrator participation in instructional rounds* and was created by summing up the affirmative responses to the following two survey questions: 1.) I participated in focused school visits at my school and 2.) I participated in focused school visits at another school. The next measure captures *administrator organization of instructional rounds* and was created by summing up the affirmative responses to these two following questions: 1.) I organized the focused school visits at more than one school, 2.) I organized the focused school visits at one school. Both of these composite measures were standardized by z-scoring in our analysis. Finally we have a dummy coded measure capturing whether the *administrator facilitated rounds* (1=yes, 0=no).

Analysis

In carrying out our analysis, first we ran t-tests in SPSS to determine whether there were differences in involvement in and understanding of various district initiatives across the two years of the study (*see table two*.)

We then produced a series of network maps (*see figures one, two and three*) in Netdraw to visually represent the instructional networks in the three districts. The nodes are color coded by whether the administrator is central office (red) or site-based (blue)

and sized by out-degree, given that it was the degree centrality measure that showed the most variation in our findings. We also conducted core-periphery analysis in UCINET to determine whether any of the networks correspond to a core-periphery network structure. A CP network structure is one that has a dense cohesive central core of actors with a less connected periphery (Borgatti and Everett 1999; Wasserman and Faust 1998; Daly and Finnegan, 2009). In UCINET, core-periphery analysis reports the correlation between a given network and a theoretically perfect CP model. It also produces a "coreness" score for each actor, and indicates which actors are in the core of a given network. While none of the networks were centralized enough to correlate with a CP structure, we were able to map the "core" actors in each of the networks (denoted by a circle within a black box), allowing us to visually track the most central actors over the two years.

We then produced a series of overall network measures (*see table three and four*) and ran a series of t-tests in the UCINET software to determine whether there was a statistically significant difference in the degree centralization measures in year one and year two, and between central office and site administrators (*see table five and six*).

Finally, we conducted a series of quadratic assignment procedure (QAP) correlations in UCINET to determine the extent to which the network and equity networks are correlated to another and how that changed over time (*see table seven*).

Results

Involvement in Rounds and Understanding of District Initiatives

In this section, of our results we give an overview of how involvement in rounds and understanding of district initiatives across all of the districts changed over the two

years of our study (*see table two*). Overall, the administrators participated in rounds at very high levels, with 63% reporting that they participated in rounds in year one and 71% reporting that they participated in rounds in year two. However, involvement in rounds and understanding of district initiatives varied somewhat across the three districts.

Table Two: Involvement in and Understanding of District Initiatives in Year One and Two By District

	District One		**District Two**		**District Three**	
	Year One (n=28)	Year Two (n=27)	Year One (n=29)	Year Two (n=34)	Year One (n=39)	Year Two (n=38)
Participation in Instructional Rounds [a]						
Mean	-0.12	0.12	**0.42****	**-0.36**	**-0.42**	**0.43***
SD	(1.12*)	(0.86)	(0.84)	(0.99)	(0.93)	(0.89)
Organization of Instructional Rounds [a]						
Mean	-0.17	0.17	**0.48*****	**-0.41**	-0.28	**0.29*****
SD	(0.78)	(1.18*)	(1.25**)	(0.43)	(0.74)	(1.15***)
% of Administrators Facilitating Rounds [b]	14.3%	11.1%	**20.7%***	**2.9%**	**2.6%**	**25.0%****
Understanding of Achievement Gap Initiatives [a]						
Mean	0.09	-0.09	-0.03	0.03	**0.28***	**-0.30**
SD	(1.01)	(1.00)	(1.07)	(0.95)	(1.00)	(0.92)
Understandings of College Prep Initiatives [a]						
Mean	0.06	-0.06	**-0.29**	**0.25***	-0.18	0.20
SD	(0.95)	(1.10)	(0.95)	(0.98)	(1.10)	(0.89)
Understanding of Theory of Action [a]						
Mean	-0.14	0.16	-0.05	0.05	-0.17	0.19
SD	(1.13)	(0.82)	(0.95)	(1.05)	(1.00)	(0.98)
Understanding of Problem of Practice [a]						
Mean	**-0.33**	**0.35***	0.18	-0.15	**-0.46**	**0.51*****
SD	(1.02)	(0.86)	(1.13)	(0.86)	(0.89)	(0.86)

* $p < .05$, indicated on the higher of the two numbers.
** $p < .01$, indicated on the higher of the two numbers.
*** $p < .001$, indicated on the higher of the two numbers.
(Statistically significant mean differences are bolded)
[a] measure is composite which has been standardized by z-scoring (M=0, SD=1).
[b] measure is a dummy variable indicating whether the administrator facilitated rounds (1=yes, 0=no).

In District One, participation in rounds and understanding of most of the district initiatives remained stable over the two years of the study with no change (p>.05) (*see*

table two). There was only a change in average administrator understanding of district problem of practice, which saw a moderate increase over the two years (ES=0.68, p<.05).

It is of interest to note that District Two was the only district in which involvement in rounds *dropped* over the two years (*see table two*). District Two experienced a substantial decrease in both administrator participation in instructional rounds (ES=-.079, p<.01) and administrator organization of instructional rounds (ES=-0.88, p<.001). Moreover, in year one 20.7% of district administrator reported having facilitated rounds, while in year two only 2.9% did (p<.05). In District Two, understanding of district initiatives remained stable over time (p>.05), except for average understanding of district college prep initiatives which experienced a moderate increase (ES=0.54, p<.05).

Finally, in District Three, involvement in rounds saw a marked *increase* from year one to year two (*see table two*). There was a substantial increase in both administrator participation in instructional rounds (ES=0.57, <.001) and administrator organization of instructional rounds (ES=0.85, p<.001). Moreover, in year one only 2.6% of district administrators facilitated rounds while in year two one-fourth of them did (p<.01). There was also a substantial increase in average understanding of problem of practice (ES=0.97, p<.001), but a moderate decrease in the average understanding of college prep initiatives (-0.58, p<.05).

Distribution and Centralization Across the Instructional Networks

In this section we discuss the development of the instructional networks in all three districts, focusing on centralization and the distribution of influence (*see tables*

three, four and five and six). In order to do this, we focus on the levels of reciprocity, fragmentation and centralization in the instructional networks as well as the distribution of influence across administrators in the instructional networks over the two years.

In District One's instructional networks saw a marked decrease in centralization, and influence became more evenly distributed across administrators over the two years of the study. Over the two years of the study the instructional networks in District Two did not experience much change in centralization and distribution of influence. Finally, while District Three was not centralized enough to be characterized by a conventional core-periphery structure and it became slightly less centralized over time, it was more centralized than the other two districts after year two.

Table Three: Instructional Networks Across the Three Districts—Whole Network Measures

	District One		**District Two**		**District Three**	
	Year One	Year Two	Year One	Year Two	Year One	Year Two
Density [a]	0.267	0.297	0.200	0.205	0.188	0.226
Reciprocity [b]	0.425	0.525	0.333	0.369	0.267	0.315
Fragmentation [c]	**0.225***	**0.160**	**0.222***	**0.179**	**0.182**	**0.267***

* $p < .05$, indicated on the higher of the two numbers.
** $p < .01$, indicated on the higher of the two numbers.
*** $p < .001$, indicated on the higher of the two numbers.
(Statistically significant differences are bolded)
[a] overall density is the ratio of existing ties to possible ties
[b] overall reciprocity is the percent of all present ties that are reciprocated
[c] overall fragmentation is the proportion of not connected pairs of nodes to the possible pairs of nodes that could be connected

Table Four: Network Centralization in Instructional Networks Across Three Districts in Year One and Two

	District One		District Two		District Three	
	Year One (n=31)	Year Two (n=31)	Year One (n=36)	Year Two (n=39)	Year One (n=44)	Year Two (n=45)
In Degree Centralization [a]	24.9%	18.2%	21.2%	20.0%	29.0%	28.7%
Out Degree Centralization [a]	74.8%	46.7%	39.3%	47.7%	65.6%	62.0%

[a] Network centralization measures are Freeman Graph Centralization measures, which compares the degree of centralization in a network as a percentage of that of a perfectly centralized of the same size.

Table Five: Individual Measures of Network Centrality by in Year One and Two by District

	District One		District Two		District Three	
	Year One (n=31)	Year Two (n=31)	Year One (n=36)	Year Two (n=39)	Year One (n=44)	Year Two (n=45)
In Degree [a]						
Mean	8.00	8.90	7.00	7.79	**8.09**	**9.93***
SD	(2.90)	(3.01)	(2.97)	(3.06)	(3.84)	(4.40)
CV [c]	36.3	33.8	42.4	39.3	47.5	44.3
Out Degree [b]						
Mean	8.00	8.90	7.00	7.79	8.09	9.93
SD	(7.42)	(6.20)	(6.01)	(6.76)	(8.91)	(8.82)
CV [c]	*92.8*	69.7	*85.9*	*86.8*	*110.1*	*88.8*

* $p < .05$, indicated on the higher of the two numbers.
** $p < .01$, indicated on the higher of the two numbers.
*** $p < .001$, indicated on the higher of the two numbers.
(Statistically significant results are bolded)
[a] In degree captures the amount of ties going in to an actor. It can be thought of as a measure of popularity.
[b] Out degree centrality captures the amount of ties going out from an actor. It can be thought of as a measure of influence.
[c] The coefficient of variation (CV) is calculated by taking the SD of the degree centrality divided by the mean of degree centrality and multiplied by 100. It can be thought of as a measure of dispersion around the mean—with higher values indicating more heterogeneity in amount the ties that actors have. Extremely high CVs (<80) are italicized.

Table Six: Site and Central Office Degree Centrality by in Year One and Two by District

	District One		**District Two**		**District Three**	
	Site Based (n=13)	Central Office (n=18)	Site Based (n=19)	Central Office (n=20)	Site Based (n=21)	Central Office (n=23)
Year One						
In Degree [a]						
Mean	8.17	7.85	**5.79**	**8.88****	9.10	7.35
SD	(3.27)	(2.32)	(2.75)	(2.78)	(2.29)	(4.92)
CV [c]	40.0	29.6	47.5	31.3	25.2	66.9
Out Degree [b]						
Mean	**5.07**	**10.17***	5.95	8.70	6.86	9.39
SD	(2.87)	(8.81)	(6.51)	(5.46)	(6.40)	(10.89)
CV [c]	56.4	*86.6*	*109.4*	62.8	*93.3*	*116.0*
Year Two						
In Degree [a]						
Mean	9.94	8.21	7.16	8.60	**8.52**	**11.54***
SD	(2.90)	(2.81)	(2.94)	(2.94)	(2.34)	(5.32)
CV	29.2	34.2	41.1	34.2	27.5	46.1
Out Degree [b]						
Mean	**6.88**	**11.06***	**4.63**	**11.00*****	9.86	10.38
SD	(4.69)	(6.63)	(5.17)	(6.66)	(7.93)	(9.86)
CV [c]	68.2	59.9	*111.7*	60.5	*80.4*	*95.0*

* $p < .05$, indicated on the higher of the two numbers.
** $p < .01$, indicated on the higher of the two numbers.
*** $p < .001$, indicated on the higher of the two numbers.
(Statistically significant results are bolded)
[a] In degree captures the amount of ties going in to an actor. It can be thought of as a measure of popularity.
[b] Out degree centrality captures the amount of ties going out from an actor. It can be thought of as a measure of influence.
[c] The coefficient of variation (CV) is calculated by taking the SD of the degree centrality divided by the mean of degree centrality and multiplied by 100. It can be thought of as a measure of dispersion around the mean—with higher values indicating more heterogeneity in the amount ties that actors have. Extremely high CVs (<80) are italicized.

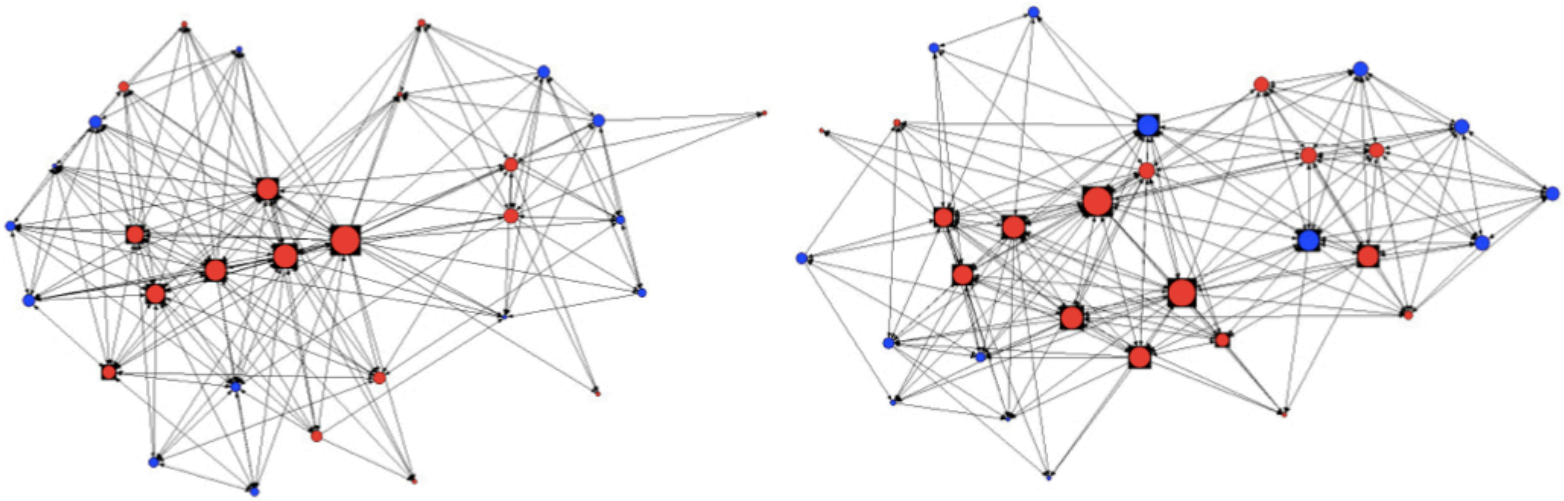
District One

As previously discussed, District One was characterized by steady participation in rounds over the two years of our study. The instructional networks in District One became less fragmented over the two years (*see table three*). In the first year of our study, 22.5% of pairs of administrators that could be connected with a frequent tie were not, and in the second year of our study, that percentage dropped to 16% ($p<.05$). In the first year of our study, the overall density in District One was 27%, meaning that 27% of all

possible communication ties in the network (n=756) occurred at a high frequency and of all pairs of administrators that had a frequent communication tie, 42.5% of those ties were reciprocal. There was no significant increase in density or reciprocity in year two ($p>.05$).

Along with the decrease in fragmentation, the district's instructional networks, which are visually represented in network maps, (*see figure 1*) also saw a marked decrease in centralization, and became much more distributed over the two years of the study. In year one, the central office administrator nodes (color coded red) are much larger than the site-based administrator nodes (color coded blue) indicating higher levels of out-degree centrality. Moreover, all seven of the "core" members of the network from the CP analysis (denoted by the circle, within a black box) are central office administrators.

Figure 1: Instructional Networks in District One



Year One

Year Two

In year two however, the site administrator nodes seem to have grown in relative size, indicating an overall and relative increase in out-degree centrality. Moreover, of the eleven core members in that year's instructional network, two are now site-based administrators. The fact that more administrators are core members, and the fact that some of the core members are now site-based, suggests that influence is becoming more evenly distributed in the instructional networks over time.

This trend toward decreased centralization and increased distribution is also evident in the network measures. District One experienced a decrease in centralization over the two years of our study (*see table four*). While the level of in-degree centralization was moderately low in both year one and year two (25% and 18% respectively)—meaning that levels of popularity were fairly evenly distributed across all administrators—the level of out-degree centralization was quite high in year one (75%). This indicates that the level of influence across district administrators was very unevenly distributed. However, in year two, the out-degree centralization dropped quite substantially to 47%. This suggests that the influence became more evenly distributed in the district over time, although it remained somewhat unevenly distributed.

A similar trend is apparent if we examine the actor-level measures of out-degree centrality and coefficients of variation (*see table five*.) A coefficient of variation (standard deviation divided by mean, times 100) can be thought of as a standardized measure of dispersion or variation around the mean (Hanneman & Riddle, 2005). In year one, the very high coefficient of variation for average administrator out-degree (92.8) indicates that there is quite a lot of variation in the amount of influence that administrators exert. Moreover, if we compare the out degree centrality across central

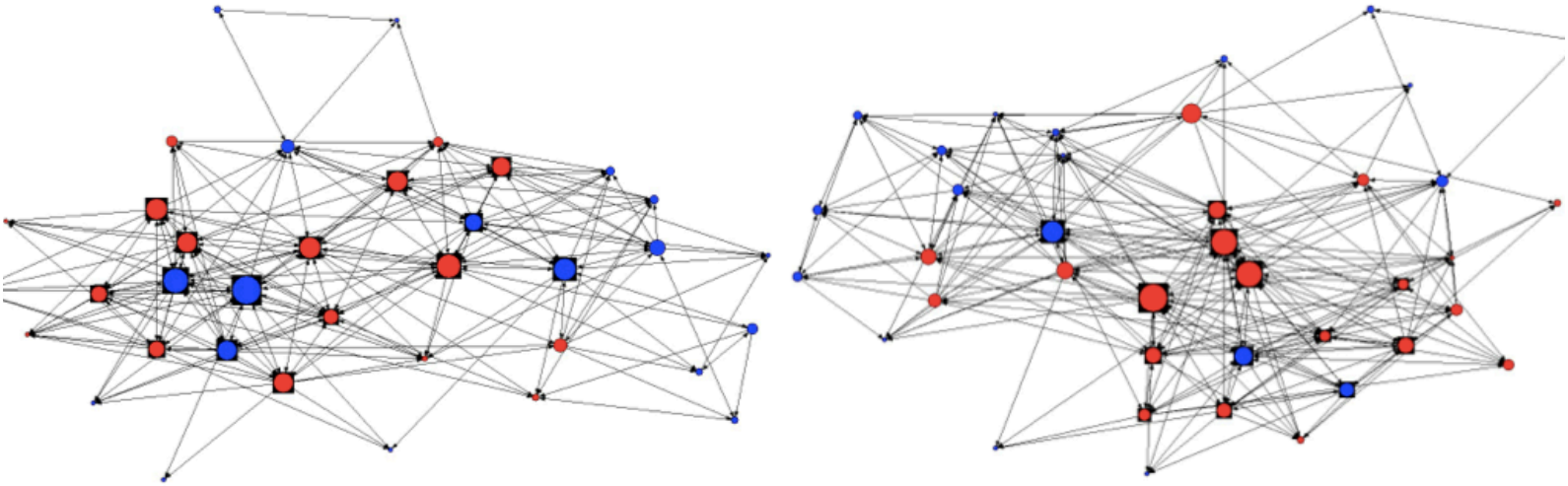
office and site based administrators, we can see that central office administrators have, on average about five more outgoing ties than district administrators in year one ($p<.05$) (*see table six*). This suggests that central office administrators exert much more influence in the instructional network in year one. However, in year two the coefficient of variation for average administrator out-degree dropped to 69.7. This indicates that influence became more evenly distributed across administrators in year two. We can also see that the difference, on average, in outgoing ties between central office and site administrators dropped to about four ($p<.05$).

District Two

In contrast to District One, over the two years of the study the administrators in District Two participated much less in rounds over time. However, similar to District One, the instructional networks in District Two, became less fragmented over time (*see table three*). In the first year of our study, approximately 22% of pairs of administrators that could be connected with a frequent tie were not, and in the second year, that percentage dropped to slightly to 18% ($p<.05$). In the first year of our study, the overall density in District Two was 20%, meaning that 20% of all possible communication ties in the network (n=812) occurred at a high frequency. The density remained unchanged in year two, as did the reciprocity of frequent ties, which was 33.3% in year one ($p>.05$).

The network maps (*see figure 2*), suggest that influence in the instructional networks might have also become more unequally distributed over the two years.

Figure 2: Instructional Networks in District Two



Year One Year Two

In year one, the central office administrator nodes (color coded red) do not appear to be much larger than the site-based administrator nodes (color coded blue) suggesting that levels of out-degree centrality are not too different across the two groups. Moreover, of the fifteen "core" members of the network (denoted by circle within a black box), a third are site-based administrators. In year two however, the central office administrator nodes seem to have increased in relative size compared to the site-based nodes, signaling that they have increased in average out-degree centralization, or influence. Moreover, the number of "core" members dropped to thirteen, and only three of those are site-based administrators.

If we examine the actor level measures of out-degree centrality, (*see table five*) we can also see that administrator influence did not become more evenly distributed over time. In year one, the coefficient of variation for average administrator out-degree is quite high (85.9) and remains so in year two (86.8). This indicates that across both years, there is quite a lot of variation in the amount of influence that District Two administrators exert.

Moreover, if we compare the degree centrality across central office and site based administrators, we can see that over time, central office administrators came to exert more influence in the network, as we can see in the district network maps. Although, central office administrators had, on average, about three more incoming ties than site-based administrators in year one ($p<.01$), there was no difference in average amount of outgoing ties (*see table six*). However, in year two, central office administrators jumped to having, on average, about six more outgoing ties that site-based administrators, a substantial increase ($p<.001$). This suggests that over time, central office administrators came to exert much more influence in the instructional network and that the network became less evenly distributed over time.

Although administrator influence appears to be becoming less evenly distributed, District Two did not experience much change in centralization over the two years of our study (*see table four*). The level of in-degree centralization was moderately low in both year one and year two (21% and 20% respectively)—and remained virtually unchanged. The level of out-degree centralization was moderate in both year one and two (39% and 48% respectively), and actually increased slightly by 9% over the two years.

District Three

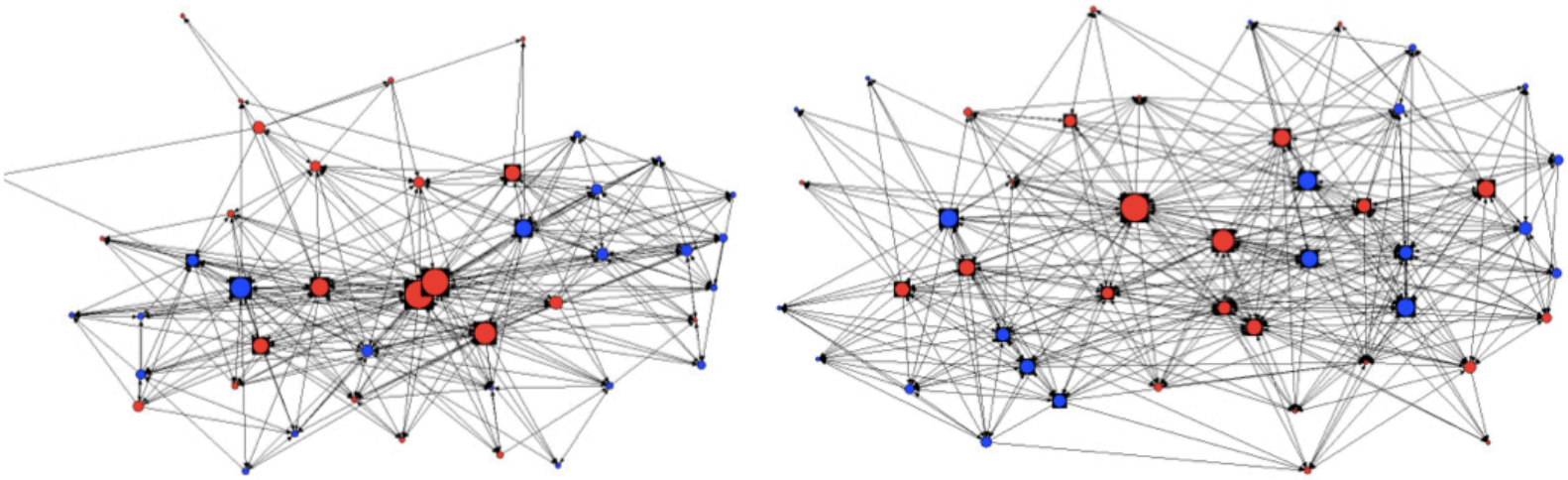
District Three saw a marked increase in administrator participation in rounds. However, it is interesting to note, that District Three is the only district that experienced an increase in fragmentation in the instructional networks over the two years of our study (*see table three*). This could be due to the fact that seven of the administrators were new

to the district over the two years.[3] In the first year of our study, 18.2% of pairs of administrators that could be connected with a frequent tie were not, and in the second year of our study, that percentage increased to 26.7% ($p<.05$).

In the first year of our study, 19% of all possible communication ties in the network (n=1,482) occurred at a high frequency, and of all pairs of administrators that had a frequent ties, 26.7% of those ties were reciprocal. There was no significant increase in reciprocity or density between year one and year two ($p>.05$).

The network maps (*see figure 3*) suggest that the district's instructional network was highly centralized in year one, but saw a modest decrease in overall network centralization in year two.

Figure Three: Instructional Networks in District Three



Year One Year Two

In year one, the central office administrator nodes (colored red) do not seem to be much larger than the site-based administrator nodes (colored blue), in general suggesting

[3] In year one District Three, had six new administrators (five were outside of the district) and in year two it had six new administrators (and two were from outside of the district).

that out degree centrality is similar across the two groups of administrators. However, there are two very influential central office administrators in the center of the map. Of the nine "core" members in the network (denoted by the circle, within a black box) two thirds are central office administrators and one third are site-based administrators.

In the year two network map, there still seems to be little difference in the size of central office and site-based administrator nodes. The number of core members has jumped to, nineteen, and of those eight are site-based administrators, almost half. However, regardless of primary work location, there is quite a lot of variation in the size of administrator nodes, demonstrating that influence is did not become much more evenly distributed in the network.

The network measures tell a similar story, indicating that the district was somewhat centralized in year one, and that, while it remained centralized in year two, it became slightly less centralized. We can see this modest decrease in centralization in the network centralization measures (*see table four*). While the level of in-degree centralization was moderate and virtually unchanged from year one to year two (29% in both years), the level of out-degree centralization was quite high in year one (66%). This indicates that the level of influence across district administrators was very unevenly distributed. In year two, the out-degree centralization dropped slightly to 62%. This suggests that the influence did not become substantively more distributed in the district over time, which we can also see in the network maps.

A similar trend is apparent if we examine the actor-level measures of out-degree centrality (*see table five*.) In year one, the high coefficient of variation (CV) for average administrator out-degree (110.1) indicates that there is quite a lot of variation in the

amount of influence that administrators exert. While the out-degree CV drops to 88.8 in year two, it is still quite high, indicating that the amount of influence that the administrators exert remained very unevenly distributed. It is also interesting to note that the increase in average administrator in-degree from approximately 8 incoming ties to almost 10 was statistically significant, due to the relatively narrow standard deviations around the two means ($p<.05$).

If we compare the out degree centrality across central office and site based administrators, it is interesting to note that there is no difference on average, in-degree or out-degree centrality in year one ($p>.05$) (*see table six*). This suggests that central office and site-based administrators are equally popular and influential in the District One instructional network in year one. However, the very large coefficients of variation for both site (CV=93.3) and central office (CV=116.0) out-degree averages, suggests that there is a lot of within group variation in the amount of influence that administrators exert.

In year two, there is still no difference in out-degree centrality, on average, between central office and site-based administrators. The out-degree coefficients of variation remain quite large for both site (CV=80.4) and central office (CV=95.0) suggesting that there is are some site-based and central office administrators who are very influential and some site-based and central office administrators who are not influential at all. However, the out degree CVs have from year one decreased suggesting that there might be some modest increase in the evenness of distribution in the amount of influence that administrators exert. It is interesting to note that in year two, central office administrators receive approximately three more ties, on average than site-based

administrators ($p<.05$), indicating that they came to have higher levels of popularity, while in year one, there was no difference between site and central office popularity ($p>.05$).

Relationship Between Instructional and Equity Networks

The final section of results presents some preliminary findings from our analysis of the equity networks in the three districts (*see table seven and eight.)* District One and Two both saw development in their equity networks over the two years of the study, and after year two, these equity networks can be characterized as distributed. District Two is an interesting case because despite the fact that administrator participation in rounds declined over the two years, the District also launched a major equity initiative in year two of the study. District Three did not see much development of its equity networks.

Table Seven: Equity Networks Across the Three Districts—Whole Network Measures

	District One		**District Two**		**District Three**	
	Year One	Year Two	Year One	Year Two	Year One	Year Two
Density [a]	0.144	0.178	0.078	0.123	0.109	0.119
Reciprocity [b]	**0.241**	**0.419***	**0.153**	**0.342*****	0.018	0.118
Fragmentation [c]	**0.418*****	**0.383**	**0.513*****	**0.439**	**0.712**	**0.734*****
In-Degree Centralization [d]	20.2%	13.0%	10.0%	14.7%	20.2%	20.9%
Out Degree Centralization [d]	63.0%	45.1%	40.2%	36.2%	73.8%	70.8%

* $p<.05$, indicated on the higher of the two numbers.
** $p<.01$, indicated on the higher of the two numbers.
*** $p<.001$, indicated on the higher of the two numbers.
(Statistically significant differences are bolded)
[a] overall density is the ratio of existing ties to possible ties
[b] overall reciprocity is the percent of all present ties that are reciprocated
[c] overall fragmentation is the proportion of not connected pairs of nodes to the possible pairs of nodes that could be connected
[d] Network centralization measures are Freeman Graph Centralization measures, which compares the degree of centralization in a network as a percentage of that of a perfectly centralized of the same size.

Table Eight: QAP Correlations Between Equity and Instructional Networks in Year one and Two

	District One	District Two	District Three
Year One	**0.67*** **	**0.57*** **	**0.63*** **
Year Two	**0.71*** **	**0.79*** **	**0.66*** **

* $p < .05$, ** $p < .01$, *** $p < .001$ (Statistically significant results are bolded)

We can see from these results that the equity networks in District One and Two became more reciprocal over time and saw a decrease in out-degree centralization (*see table seven*). District One saw a 17.8% increase in reciprocated "frequent" communication ties ($p<.05$) and District Two saw a 18.9% increase ($p<.001$) over the two years of our study. The levels of out-degree centralization in District One (45.1) and District Two (36.2) in year two are fairly low, indicating that influence is pretty evenly distributed in the equity networks.

These results are especially interesting given that District Two was the only district to see a decrease in administrator involvement in rounds over the two years of the study (*see table two*.) However, the district launched a major de-leveling (detracking) initiative in the second year of our study—suggesting an increased focus on equity. This is also reflected in the fact that District Two was the only district to see a moderate increase in administrator understanding of college prep initiatives— an explicit focus of the de-leveling initiative (ES=0.54, $p<.05$) (*see table two*).

There is also some evidence that in District Two the instructional and equity networks became more similar over time (*see table eight*.) While all of the district instructional and equity networks are moderately correlated with one another in year one,

in District Two, the instructional and equity networks become strongly correlated to one another in year two (.790, $p<.001$.)

In contrast to District One and Two, District Three, saw no statistically significant increase in the reciprocity of its equity network over the two years of the study (*see table seven*). Moreover, while District One and Two experienced a decrease in fragmentation, District Three actually saw an increase in fragmentation over the two years ($p<.001$). It is also important to note that level of fragmentation in District Three at the year two (73.4%) is much higher than the other two districts. The out-degree centralization in District Three in year two (70.8%) is also high, indicating that influence is not as evenly distributed in that district's equity network as it is in the other two. It is of interest to note that District Three actually experienced a moderate decrease in the average understanding of college prep initiatives (-0.58, $p<.05$), one of the equity-related initiatives (*see table two*).

Conclusion and Implications

We embarked on this study in order to explore the role that instructional rounds, walkthroughs and related activities might play in the development of the capacity needed to improve instruction and address issues of equity. We hypothesized that participation in rounds might contribute to the kinds of distributed networks that characterize a community of practice which, in turn, might help to establish the relationships, common language, and shared understanding integral to building social capital. Our analysis of the evolution of the social networks in three districts provides some support for these ideas at the same time that it raises key questions about exactly what kinds of networks rounds might promote; how these networks might develop over time; and what might be

needed in order to foster networks that can lead to improvements in outcomes for all students. Here we briefly summarize the answers to our research questions and conclude with a discussion of the implications for research and practice and the further development of rounds initiatives, particularly those intended to address issues of instruction and equity.

First, our survey confirms that, overall the administrators in these districts are participating in rounds at relatively high levels. However, over the two years of the study, participation and understanding of rounds and equity initiatives varies somewhat from district to district. Thus, in District One, participation in rounds and understanding of initiatives remained relatively stable. But in District Two, there was a marked decline in participation in rounds, but no change in understanding of district initiatives except for an increase in the understanding of initiatives focused on preparing all students for college. In district three, there was an increase in participation in rounds as well as an increase in understanding of the district problem of practice (a focus of the rounds visits) but a moderate decrease in understanding of initiatives related to preparation for college.

These results are consistent with our observations and work in these districts. Thus, district one put in a place a rounds structure that was relatively new in year one and unchanged from year one to year two. However, in District Two, administrators who had participated in frequent walkthroughs in year one (and, in fact, in previous years), felt that they had benefitted from the walkthroughs but that they did not need to continue them as often as they had in the past. In addition, the district launched its effort to de-level their middle school as part of a district-wide effort to provide all students with equal access to college. District Three, in contract, began a rounds initiative in year one with

visits arranged in each elementary school, and, in year two, the superintendent expanded the initiative with two rounds visits in all of the districts' schools.

Second, consistent with our initial expectations, the data from these three districts show that the networks of administrators who talk to one another about teaching and learning are relatively well distributed and are not highly centralized. Overall, density ranged from a low of 18% to a high of 30% (indicating that 30% of all possible frequent ties were made once or twice a month). In addition, there are no administrators in any district who are not frequently communicating with at least one other administrator about issues of teaching and learning, and fragmentation ranged from a high of 27% to a low of 16% (indicating that only 16% of all possible pairs of administrators in that district were not connected). Furthermore, none of the three districts in our study was characterized by the kind of conventional "core-periphery" structure indicative of a centralized network.

Examining the evolution of the networks over the two years of the study and the relationship between that evolution and participation in rounds and understanding of district initiatives reveals a more complicated picture, however. In District One, which began a rounds initiative in year one and continued it in year two, the instructional network became more distributed and less centralized. District Two also showed a pattern consistent with our hypotheses as administrators showed a decrease in rounds participation in year two and the network in year two became somewhat less distributed, with influence more centralized among central office administrators. In contrast, in District Three, where there was a marked increase in participation in rounds, there was only a modest decrease in centralization. Furthermore, there was also a substantial increase in fragmentation. We are currently exploring factors that might have contributed

to this high degree of fragmentation, including the fact that District Three had considerable turnover among central office administrators in between year one and year two. In addition, an Assistant Superintendent in a central position in the network was among those who left the district.

Third, the instructional networks and the equity networks in years one and two in all three districts are highly correlated, suggesting that the communication patterns around issues of instruction and equity are not significantly different. In some ways, these data conflict with our expectation that administrators might be talking with different people about issues of instruction and about issues of equity. However, previous studies suggest that relatively high correlations between networks are common (Daly, personal communication). Furthermore, the one district that launched a major equity initiative in year two (District Two) and showed an increase in understanding of an equity-related initiative (preparing all students for college) was also the only district in which there was a signficant increase in the correlation between the instruction and equity networks over time and in which the equity network is becoming more distributed, reciprocal and less centralized over time. Furthermore, the one district that showed a significant decrease in understanding of initiatives related to preparing all students for college was also the one district that did not see any significant development in its equity networks.

Implications

These results overall lend some credence to the idea that rounds may help to foster connections amongst administrators about issues of teaching and learning and that rounds may support the development of distributed networks. At the same time, the

results illustrate how much we have yet to learn about what "appropriate" network structures might be. Given that social network analysis has only recently been applied to describe the relationships amongst administrators in school districts, it is not clear what an "ideal" network focused on instruction might look like. Until more systematic comparisons have been conducted, it will remain hard to know whether the networks we have documented are substantially different from those that you might expect to see in districts that are not engaged in rounds. Furthermore, while some of the early studies of social networks among district administrators have taken place in larger districts, the districts in this study are relatively small. It is hard to know whether the low levels of fragmentation observed in these smaller districts should be anticipated in larger districts. Similarly, there may be a number of structural constraints – including the number of administrators in a district, the number of school buildings, and the geographic distribution of people throughout the district – that mitigate the impact of rounds.

In order for rounds to support the development of relationships and common language in larger districts, explicit efforts might need to be made to take these mitigating factors into account. For example, we are currently conducting network analyses in a mid-size district in which rounds are conducted in clusters of schools. In that district, one might not expect to see connections between central office and site-based administrators distributed across the district unless individuals are purposely assigned to participate in rounds outside their cluster. In addition to these structural factors, contextual factors like the extent of administrator turnover experienced in district three may also have a significant impact on the power of rounds.

In addition to district characteristics, these results illustrate some of the other complications that those engaging in rounds may want to take into account. For example, there may not be a one-to-one correspondence between the number of rounds and the benefits. Thus, after a certain point, engaging in large numbers of rounds may not actually build more connections and may contribute to frustrations or other problems if participation in rounds takes time away from other activities. However, even if a district like District Two de-emphasizes rounds, it may still be possible to maintain some benefits by periodically re-emphasizing rounds or alternating time spent on rounds with other district priorities. Thus, District Two's increase in centralization in the rounds network may not be a problem if attention and collaborative work has shifted to another initiative like preparation for college, and the network of connections related to that initiative is growing and becoming more distributed and less centralized.

In terms of equity, our work with the three districts in this study as well as with the larger group of superintendents in which these districts participate highlighted for us the challenges of bringing work on instruction and equity together. While our results show that there is a significant overlap between the instructional networks and the equity networks, it would be interesting to know whether we would have observed as much concordance between the networks on instruction and equity in these districts, if we had mapped the social networks in these districts in 2008-09 and 2009-10. These were the first two years of the superintendents' group when there was less emphasis on equity in the monthly meetings. Conceivably, the high correlation between the networks on instruction and equity we observed already reflected the impact of efforts in the districts to focus explicitly on both issues of instruction and equity in 2011-12 and 2012-13.

Further research needs to be done in districts that have not had such a dual focus on instruction and equity or at earlier points in the development of their initiatives in order to explore this possibility.

The fact that the equity network in District Two has become more distributed and less centralized in year two, even though participation in rounds has decreased, also raises other important hypotheses for further exploration. For example, it could be that rounds has, as we anticipated, established the social capital and relationships that can carry over even under circumstances where rounds has not been emphasized. On the other hand, it could be that the equity-related initiatives in the district themselves are helping to build those connections across the district. We are currently exploring this possibility in District Two, but it is worth noting that the de-leveling initiative in that district focuses primarily on a particular building and level. While this initiative is part of a long-term strategy for influencing performance throughout the district, the focus has been on and among those working at the middle school. In either case, future research would benefit from a more precise tracking of the specific initiatives related to equity in which the districts are engaged and of the administrators involved in those efforts. To date, in-depth observations of the meetings and activities within each of the districts have been beyond the scope of our research.

All in all, while these kinds of mitigating and complicating factors can make it difficult to develop a precise model of the effects of rounds in general and in the development of the social capital needed to address issues of equity, illuminating these factors may help district administrators design rounds with key aspects of the structure and context of their district in mind. In particular, district administrators might want to

be particularly sensitive to engaging in "enough" rounds to develop productive relationships across individuals who might not normally interact, without engaging in so many rounds that it takes away opportunities to develop relationships focused specifically on issues of equity. Another possibility would be to focus the problems of practice of rounds visits specifically on issues of equity. Conceivably, district administrators could also use data from network surveys to help them track the development of connections in their districts and to help them refine their efforts to develop the social capital needed to foster systemic improvements in learning for all students.

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