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UNIVERSITY OF CALIFORNIA, SAN DIEGO
CALIFORNIA STATE UNIVERSITY, SAN MARCOS

Teachers' Social Networks and Collaborative Sense-making
in a School Reform Effort

A dissertation submitted in partial satisfaction
of the Requirements for the Degree of Doctor of Education

in

Educational Leadership

by

Kimberly Reed

Committee in charge:

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Carol Van Vooren

2017

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Chair

University of California, San Diego

California State University, San Marcos

2017

Dedication

This dissertation is dedicated to my husband,
Tom and my son, Colin for the love, encouragement and
support they provided me on this journey.

And to the incredible staff who participated in this research.
Your strength and passion overwhelms me to this day.

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I also want to thank those who thought I couldn't.

Your influence was equally motivating.

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Abstract of the Dissertation

Teachers' Social Networks and Collaborative Sense-making
in a School Reform Effort

by

Kimberly Reed

Doctor of Education in Educational Leadership

University of California, San Diego, 2017
California State University, San Marcos, 2017

Carolyn Hofstetter, Chair

Opportunities for deep, sustained organizational change exist when teachers are included in the conception and implementation of the reform model. Yet top down, hierarchical systems push teachers farther away from this process instead of drawing them closer. Leaning on theoretical frameworks that indicate that teachers build collective understanding through the relationships and networks they establish and those decisions ultimately impact the organization

as a whole, this study seeks to understand collaboration within a reform effort.

Situated in a district deeply entrenched in hierarchical processes, Grand Avenue School offers a glimpse into a organization grappling with a site initiated reform effort. Layering Social Network Analysis with journal entries for depth, staff members at Grand Avenue helped to paint a portrait of collaboration using positive moments of both formal and informal interactions. This study found that teacher leadership emerged, shifted and changed as the need presented itself and the participant had the knowledge and skills to meet it. Both formal and informal roles had the ability to mediate the flow of information throughout the network and to push the work of collaboration to levels that impacted pedagogy and teachers thinking about teaching and learning. Importantly, the study also found that strong personal relationships produced deeper levels of collaboration.

These findings imply the need for re-visioning schools as open, flexible systems that are reflective of local talent within the organization, requiring that systems and structures be revised to create space for local expertise to rise up to meet local challenges. They also underscore the importance of relationships; relationships that are capable of supporting the meaningful conversations required for deep collaboration and knowledge exchange. Recommendations for future research are also presented.

Chapter 1: Introduction

School districts across the United States have seen the emergence of market-based reforms, centered on compliance around a narrowly defined set of strategies and scripted curriculum. The conception and development of these reforms are separate from the implementation and many adversely impact low-income, minority students by neglecting the multicultural aspects that permeate their schools. The result is a shift from collegiality and trust to hierarchy and standardization, a loss of professional judgment and control in lieu of centralized control from a distance. As these new reforms are implemented in this way, they become *the way*, changing how educators think and value themselves and others, becoming the new norm (Anderson & Cohen, 2015).

At the same time, the communities served by many schools have become more diverse in terms of the languages spoken, the cultures and ethnicities embodied, and the socio-economic status represented (Maxwell, 2014). This diversity adds to the complexity of the environment in which educational organizations operate and create exciting challenges for educators.

Researchers in the field note that “As classrooms become more culturally, linguistically, ethnically, economically, and academically diverse, new pedagogy that effectively addresses the richness of difference is essential” (Friedman, Galligan, Albano, & O’Conner, 2009, p. 265) and call for open structures that allowed for creative responses (Honig, 2004) and space for emerging pedagogy to develop. Furman (2004) describes shifting the responsibility for delivering school improvement and reform to the collective responsibility of the entire organization or community through a process of deep collaboration. She describes a common process for pursuing social justice in schools that includes deeply understanding, fully participating, and working toward the

good of all by engaging stakeholders of the community. This work is useful in understanding both the importance of teacher leaders as stakeholders in the school community as well as the applicability of the concept of collaboration to achieve the goal of organizational leadership inclusive of the teacher leader.

Statement of the Problem

Schools are facing the complicated issues of a more diverse racial, ethnic and socio-economic population of students, a widening achievement gap (Beatty, 2013), and the pressure of meeting accountability measures imposed by federal, state, and local governing boards (Domina, 2014). The National Assessment of Educational Progress (NAEP), taking into consideration students of Hispanic and White decent as well as English Language Learners and those students eligible for the National School Lunch Program, an indication of socio-economic status, reports that even though students are making long term academic gains, the gap between white students and their non-white peers remains largely unchanged (Hemphill, Vanneman & Rahman, 2011). Federal policies and practices have greatly accelerated the pressure on states, districts, and teachers to improve achievement (Darling-Hammond, Hightower, Husbands, LaFors, & Young, 2002; Domina, 2014; Hatcher, 2005). While there is no shortage of directives and mandates making their way into schools, there is a remarkable lack of sustained organizational change and academic growth as a result of those mandates (Bennett, 2012).

As stress mounts, educational organizations become more centralized, seeking to “teacher-proof” the curriculum and eliminate choice and discretion of the implementer (Darling-Hammond et al., 2002). Decisions about school improvement and reform are decided far from where implementation takes place (Gallimore, Ermeling, Saunders, & Goldenberg, 2009) and are void of local ownership, failing to reflect students’ diverse learning needs as well as the latent

talents of the site's staff. Positioned to respond appropriately are those closest in proximity to where student learning actually happens, the classroom teacher (Coburn, 2001; Datnow, 2006; Datnow & Stringfield, 2000, Tucker, Higgins, & Salmonowicz, 2014).

Research suggests that for educational change to happen, teachers must be “enactors of reform rather than participants” (Friedman et al., 2009, p. 267). The implication for state and district leadership seeking deep implementation of reform is that teachers must be allowed to “co-construct” those reform efforts (Coburn, 2001; Datnow, 2005; Datnow & Stringfield, 2000; Riley & Jordan, 2004; Tucker et al., 2014). Classroom teachers make sense of initiatives collectively through collaborative relationships that they have established (Coburn, 2001). They work to build and capitalize on relationships and connections to collaboratively construct meaning around teaching and learning concepts (Muijs & Harris, 2006). Teachers are provided formal, structured opportunities to collaborate but also work collaboratively in informal ways such as the impromptu conversations they have in the teacher's lounge, before or after hours, or through social media. Teacher collaboration is a critical lever for moving information and knowledge through an organization.

Purpose of the Study

This study examined a site-initiated change effort to understand how formal and informal collaboration impacted teacher leadership and learning, as well as teachers' capacity to affect the organization and its reform efforts. *Teacher leadership* is a broadly defined construct, more narrowly described for the purposes of this study as “relationships that influence...organizational learning within a school” (Van Lare & Liou, 2015). Specifically, this study seeks to illuminate moments of teacher interaction that occur in both formal and informal settings during a school-

wide change effort from a teacher perspective to look for patterns that may impact organizational learning or movement within the change initiative.

Research Questions

Collaboration promotes professional growth school improvement, whether the reform initiative is internally generated or introduced from an external source (Hargreaves, 1994). This study looks at the way teachers generate internal school improvement and also at how they make sense of externally introduced initiatives. The question that this study seeks to investigate:

What is the relationship between teachers' formal and informal networks and the school change effort? How does the participant's formal role or informal position in the network mediate the flow of information and or impact the depth of the collaborative conversations? What is the necessary context for deep, meaningful collaborative conversations in a school change effort?

Theoretical Frameworks

The reviewed literature has shown that teachers create collective understanding and affect organizational change through formally structured collaborative opportunities, as well as more informal encounters with their peers. Multiple theoretical frameworks guide the proposed research. The Sense-making theory, used by Coburn (2001) lays a foundation for understanding how teachers collectively negotiate meaning around external initiatives and Social Network Theory helps to illustrate how teachers, both formally and informally affect change in the organization through collaboration. Coburn's concept of "deep change"(2003) redefines collaboration to include creating deep organizational change that involves changing teachers beliefs and the way they interact with students.

Sense-making Theory. Sense-making theory assists in developing an understanding of how knowledge around an initiative is developed and then translated into culture (Coburn, 2001). Sense-making from the context of the classroom becomes an interaction between the teacher and the initiative. As teachers begin to make sense of the initiative within the context of their own classroom, they begin to incorporate the constructs and negotiate their own identity as it relates to the new learning (Schmidt & Datnow, 2005). Sense-making theory is described by Coburn (2001) as how school culture, including structures and routines arise from the “micro-momentary actions” of the participants as they develop understanding around the initiative. The sense-making is collective in that it is understood through the social interactions of the participants as they engage with their environment (Coburn, 2001). Sense-making theory is used as a framework to understand how teachers’ daily, micro-momentary actions establish structures and routines that contribute to positive collaborative experiences.

Social Network Theory. The social connections that are created as teachers make sense of an initiative become of interest because meaning is constructed differently depending on who teachers are interacting with. Teachers build knowledge and negotiate meaning through collaboration and social networks. Social network theory, founded on the concept of social capital, is described as the connections through which resources of others may be accessed (Daly, Moolenaar, Bolivar, & Burke, 2010b). It is useful to “quantify and visualize the ties and overall structures of formal and informal networks” (Daly et al., 2010b, p. 360; Daly & Finnigan, 2010a) to make apparent the structure of and connections between players of both formal and informal networks. Primarily concerned with the connections between individuals, social network theory relies on the structure or “configuration of positions and relationships” to analyze the behavior of individual actors (Sutano, Tan, Battistini, & Phang, 2011, p. 454). Social

networks have been shown to support or constrain the flow of resources throughout an organization (Daly & Finnegan, 2009) and are useful in helping to understand and make visible the flow of information through the process of successful collaboration.

Coburn's Concept of Deep Change. Social network theory helps to explain the relationship between the density of connections in a grade level to the “overall engagement, depth, and spread” of the reform initiative (Daly et al., 2010b), reflecting Coburn's (2003) work on the concept of “deep change”. Coburn (2003) states that her conceptual understanding of scale draws attention to the previously ignored but important outcomes of sustained and deep reform. She describes four interrelated dimensions that include “depth”, “sustainability”, “spread”, and “shift in reform ownership.” *Depth* is described as change that alters “teachers’ beliefs, norms of social interaction, and pedagogical principles” (p. 4). Well beyond simple procedural changes, depth involves challenging underlying assumptions teachers possess about student learning and effective instructional delivery. It entails changing the way in which students and teachers interact with each other as well as the way students and teachers perceive and engage with the new materials.

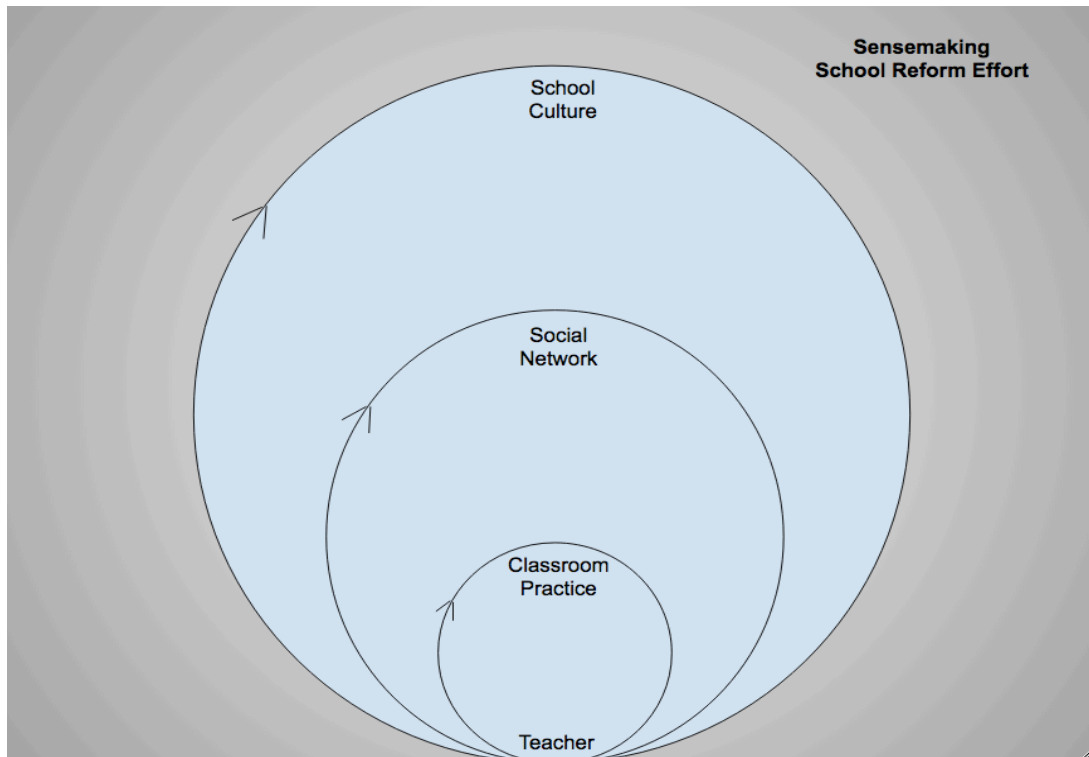


Figure 1. Connection of Social Network and Sense-making Theory

Figure 1 represents the sense-making that happens when the teacher interacts with the new initiative within the classroom. Moving outward to the middle circle, the understanding about the initiative is then mediated by the teacher’s social network. His or her micro-momentary actions then work to develop the culture of the organization, as represented in the outer circle.

Methodology

This study took a narrative inquiry approach in an effort to bring the personal experiences and voice of the teacher participants to the forefront. Qualitative methodology using personal documentation that places the teacher participant in the position of knowledge was used to understand the processes taking place. Emerging themes were used to add depth to descriptions provided by participants and participants were collaborators, actively involved in the research process itself (Creswell, 2008). Quantitative methodology in the form of a Social Network Analysis was conducted to make informal collaboration networks more visible and to help

ascertain with whom individual teachers felt the most valuable moments of collaboration happened. The selection of participants/co-researchers was based strictly on those who have volunteered to participate. The research was framed from a strengths-based approach and explained to staff as such. Teachers were asked to share *positive* experiences of collaboration to help answer the research questions. Participants kept a journal for a period of six weeks to document positive moments of collaboration and answered Social Network Analysis survey questions.

This research was conducted at an urban elementary school near San Diego. Seventy-five percent of the school's students were Latino, 55% were English Language Learners and 75 percent were of low socioeconomic status. The site was chosen because of a systemic change effort the school was engaging in. Grand Avenue School was the only elementary *Specialty School* in a large district, a result of a grassroots change effort on the part of the staff of the school itself. In 2013, the district's School Board selected a focus goal of developing alternative learning environments at some of its school sites. This site explored various possibilities and then appealed to the School Board, receiving permission along with additional funding to convert the school to a project-based learning *Specialty School* in the 2014-2015 school year. The site decided to invest heavily in capacity building in teachers and selected EL Education as the vendor for the professional development. The school began planning their conversion in the 2014-2015 school year and implemented the change in the 2015-2016 school year. In the 2014-2015 school year, Grand Avenue's "planning year", the site became the subject of a research study that examined the relationships that identify teacher leadership. Data relevant to this study were collected, including a Social Network Analysis conducted by Van Lare and Liou (2015) prior to the conversion to the EL Education model that was used as extant data in this study.

Van Lare and Liou (2015) found that at Grand Avenue School, site staff member and district leaders alike spoke of a hierarchical, top-down history of instructional initiatives and accountability-focused policies. Teachers, toiling for years in this environment, extolled the virtues of teacher leadership in moving the change effort forward while simultaneously demonstrating discomfort and reluctance to act when provided the opportunity. The study relied on an analysis of the social networks to reveal the collaborative and influential connections that existed or sometimes failed to exist within the organization. This data helped the researchers trace otherwise invisible pathways of relationships defined and imitated the change process at Grand Avenue. Citing recognition that leadership and control was shifting to teachers, the study found that many clung to old routines and structures, seeking input most often not from their peers but from those outside the classroom and in positions of perceived authority. The researchers of this study identified a need to explicitly acknowledge the routines that created the imbalance and called for a shift that places more influence in the hands of informal teacher leaders. Similarly, Furman (2004) describes shifting the responsibility for delivering school improvement and reform from one, heroic leader to the collective responsibility of the entire organization or community through a process of deep collaboration. Understanding how collaboration might achieve this purpose carries great importance for all those engaged in the work of educational reform.

Significance of the Study

Previous research on the site took place prior to reform implementation and asked about the relationships identifying teacher leadership, how teachers conceptualize teacher leadership and the persisting barriers and supports (Van Lare & Liou, 2015). This research looks specifically at collaboration within an organizational change effort, seven months into the

implementation and from an insider's perspective. The results contribute to the larger field of education by showing school leaders and policy makers the forms of collaboration that teachers report as most impactful to teaching and learning. It lights the way for those interested in creating change, either from an internally generated initiative or one from outside the organization, from the bottom up.

Chapter 2: Literature Review

This chapter begins with an explanation of teacher leadership to lay a foundation for a discussion of the concept of teacher collaboration and organizational change. A collection of research is presented to indicate that an organization may be led and changed from any level of the organization and even asserts the possibility that leadership from the bottom of the organization may have distinct advantages. The roles of relationships and networks emerge as recurring themes and are further differentiated in terms of whether they are formally structured by administration or occur naturally and informally. The chapter concludes with a discussion of an overall culture that may be described as collaborative.

Racial, ethnic and socio-economic diversity has both enriched schools and created a more complex environment in which they operate. The increasing pressure of accountability has contributed to the tendency for education organizations to become more closed and restricted, limiting the possibilities for creative responses to local issues. Initiatives created outside of the organization, far from where the efforts will be implemented are passed down as mandates through a hierarchical system of management, and thus have had limited success. Further, research indicates that 1) these top-down initiatives are often altered or ignored by teachers (Coburn, 2001; Coburn, 2003) and that 2) sustainable school improvement requires involving teachers as the initiatives are developed (Coburn, 2001; Datnow, 2006; Datnow & Stringfield, 2000; Tucker et al., 2014). The importance of the role of the teacher in the development and implementation of both internal and external reform efforts has far reaching implications for school leadership. Shulman (as quoted in Hargreaves, 1994) summarizes the shift to decentralization and local control in the following quote.

Schools are asked to become like our best corporations, employing modern methods of management to decentralize authority, to make important decisions at

the point where the street-level bureaucrats reside. Leadership is not monopolized by administrators, but is shared with teachers. (p. 187)

Positions such as these swing the focus to a discussion of the concept of teacher leadership within the school site.

Teacher leadership exists wherever there is expertise in an educational organization. The leadership role shifts from the formal leader to formal or informal groups of invested teachers who have the knowledge and skill to address the particular challenge that has arisen (Emira, 2010; Muijs & Harris, 2006).

Structures and school conditions that support teacher leadership include shared-decision making, less hierarchy, more time to discuss teaching and learning, and a supportive school culture (Bennett, 2012; Muijs & Harris, 2006). Teacher leadership is relational and is a function of the interpersonal relationships within the organization (Taylor, Goeke, Klein, Onore, & Geist, 2011, Woods, 2004). Teacher leaders influence change primarily through collaborative relationships with peers (Brinkhurst, Rose, Maurice, & Ackerman, 2011; Harris, 2004; Muijs & Harris, 2006; Scribner, Sawyer, Watson, & Myers, 2007; Taylor et al., 2011; Woods, 2004) and influence the initiative in the way that they form collective understandings and implementation strategies.

Collaboration as a way to build collective understanding is the cornerstone of effective teacher leadership (Emira, 2010; York-Barr & Duke, 2004). Meaning and sense-making are social constructs and are more easily realized in a culture of organizational learning and collaboration. Sense-making theory holds that “micro-momentary actions” based on teachers’ pre-existing assumptions and previous teaching experience builds the culture of a school (Coburn, 2001). Collaboration also affects how the initiative is implemented, sometimes in ways

in which it was not intended (Coburn, 2001). These actions are related to whom teachers collaborate with, both formally and, more importantly, informally (Leonard & Leonard, 1999). Networks have been shown to positively influence teacher leadership and “networked learning communities” push the act of collaboration further to include the product of those interactions (Harris, 2004). Social network theory allows one to “quantify and visualize the ties and overall structures of formal and informal networks” and illustrates the impact that networks have on reform initiatives (Daly et al., 2010b).

Teacher Leadership

Teacher leadership occurs wherever expertise in an organization exists and wherever teachers work together to build expertise (Harris, 2004). The concept of teacher leadership espouses a structure that is less hierarchical and more professional (Darling-Hammond et al., 2002), expanding the role of leader far beyond that of the formal leader. Teacher leadership, therefore, comes from a position of expertise rather than from rank or title and focuses on knowledge rather than position (Hatcher, 2005; Emira, 2010). This knowledge may reside in a specific person or persons in one context or situation and then from others, as the situation changes (Emira, 2010; Kezar, 2012). Unfettered by the traditional hierarchy in schools, leadership comes from all levels of the organization (Kezar, 2012). Informal teacher leadership is closely linked to teacher learning when it is focused on instructional change rather than command and control (Harris, 2003; Harris, 2004). Teachers begin to see value in the expertise of others and develop strong personal connections (Scribner et al., 2007). Teacher leadership roles may not be a formally recognized within an organization (Emira, 2010; Taylor et al., 2011; Muijs & Harris, 2006), effectively creating space for leadership to arise organically from those not appointed as leader.

Bottom-up Change

Initiatives implemented on the school level can have a significant impact on student performance when conditions including positioning “teachers as active agents in the change process” are present (Datnow & Stringfield, 2000, p. 184). Beyond structural changes, deep culture shifts in the organization are imperative to the change process. This shift is facilitated by the co-construction of the reform efforts by involved stakeholders (Coburn, 2001; Datnow, 2005; Datnow & Stringfield, 2000; Riley & Jordan, 2004; Tucker et al., 2014). Regardless of their role, teacher leaders have the capacity to change both structures and the culture of an organization (Tucker et al., 2014). The impetus for facilitating teacher involvement is represented in Rorrer and Skrla’s (2001) assertion that any policy will be influenced by the implementers, either in the construction of the reform or through their discretionary response to avoid or reinvent the initiative upon implementation. Rorrer and Skrla (2001) investigated the mediating effects school leaders have on accountability policy by reviewing two extensive research projects spanning over the course of multiple years. The schools they chose, from Texas and North Carolina exhibited demonstrable gains in achievement with diverse student groups. They found that initiatives “are influenced by local actors whose responses vary from total avoidance to complete reinvention of the educational enterprise” (p. 60).

Similarly, Friedman et al. (2009) sought to understand how teachers reconciled the dissonance between their existing beliefs about teaching and learning and the pedagogy of mandated policy, particularly when they were excluded from the policy making process. Through field notes, transcripts, and personal interviews, they conducted a case study on both an urban and a suburban elementary school within the same district. Operating under a model of leadership focused on compliance, “subcultures of democratic practice” emerged. In a *subculture*

of compliance, feelings of a loss of power and control caused teachers to blindly adopt the policy with no regard to how the policy affects students. This “mindless buy in” contains little analysis and reflection on the part of the teacher and therefore does not move the school forward in a discernable way. A *subculture of non-compliance* reflects similar feelings of powerlessness but the reaction is one of refusal to implement and adherence to previous practice. Termed “mindless buy out”, this stance also does little to move a school forward. A *subculture of subversion* refers to teachers who comply with the policy but with modifications that are made within the confines of their own classroom, effectively limiting the possibility of the dispersion of practices that could assist with the policy implementation. Finally, Friedman et al. (2009) describe a *subculture of democratic inquiry and practice* wherein teachers make conscious and professional decisions about the merits of the initiative to implement, ignore, or modify. These efforts are shared with the collective and represent the best possible model of mediating top-down policy. The sample size of this case study was small, including only 17 teachers and 2 student teachers who volunteered for the opportunity, raising questions as the generalizability of the study. However, the study delineated cultures that emerge described in terms of the feeling of teachers, adding depth to the conversation included in this research.

School Conditions and Structures that Support Teacher Leadership

Structures that ensure adequate opportunity to meet to discuss teaching and learning are instrumental in building the capacity for teacher leadership (Bennett, 2012; Muijs & Harris, 2006). The use of data for action research and professional development that reinforced collective learning, especially opportunities to learn about leadership are reported as critical (Bennett, 2012; Muijs & Harris, 2006.) Formal reward systems encourage continued development toward a teacher leadership model (Brinkhurst et al., 2011; Harris, 2004). Time and

resources are important considerations to the facilitation of teacher leadership (Bennett, 2012; Brinkhurst et al., 2011; Muijs & Harris, 2006). York-Barr and Duke (2004) add structures that build networks and social ties that are important to the development of opportunities for teacher leadership. Shared decision making and less hierarchy round out the list of structural components found in the research (Muijs & Harris, 2006).

Muijs's and Harris's (2006) case studies on five primary and five secondary school implementing a variety of external initiatives reveal school conditions that are conducive to the emergence of teacher leadership, the first of which is a *supportive culture*, characterized as supportive and positive relationships among the staff (Akert & Martin, 2012). They found strategies to encourage innovation and the sharing of ideas that were specific and intentional in schools they studied. They also identified trust as a key variable to innovation and teacher leadership (Harris, 2004). Clearly established roles and strong support from the formal leader encourage teachers to risk taking on a leadership role (Bennett; 2012; Muijs & Harris, 2006). Similar to these findings, York-Barr and Duke (2004) identify cultural aspects of inquiry, risk taking, teamwork, collective responsibility, and attitudes of professionalism in their extensive review of literature on teacher leadership. They identify trust and positive relationships, strong formal leader support, and clarity of roles as relational characteristics of environments supportive of teacher leadership. Kezar (2012) in her case study on university level grassroots leaders found that well-aligned vision and goals were school conditions that were conducive to bottom up leadership. A culture of full teacher engagement contributes to the conditions that support the concept of teacher leadership (Furman, 2004; Harris, 2004). Opportunities for multiple small groups of teachers to engage must be present in an organization, with temporary, ad hoc committees forming and disbanding as the need arises and abates (Muijs & Harris, 2006).

Formal and Informal Roles of Leadership

Teacher leadership is a model that “implies a redistribution of power and a re-alignment of authority within the organization” (Muijs & Harris, 2006, p. 962). The literature reveals a shift in the roles of those who occupy the position of principal or administrator and those who were hired to work directly with students and a shift from the traditional role of teacher as follower to teacher as leader and decision maker (Emira, 2010). The formal leader must relinquish power and control but questions remain as to how and to whom (Harris, 2004). Muijs and Harris (2006) state that the distinction between those who lead and those who follow are not so clearly defined under a teacher leadership model. This research discusses that power traditionally held with one individual, the formal leader, is dispersed among the teachers but then questions that assumption as issues of accountability arise.

Teacher leadership effectively exercises power through formal and informal leadership roles as well as through the “unsanctioned work of covert leaders” (Taylor et al., 2011). While unsanctioned work is not ineffective, deliberate actions of the principal or formal leader have a direct and potentially positive impact on the effectiveness of teacher leaders. Teacher leaders who are given permission and authority to lead, clearly defined roles negotiated by the teacher and the formal leader (Emira, 2010; Taylor et al., 2011; York-Barr & Duke, 2004), and encouraging support (Akert & Martin, 2012) are more likely to experience success than those who do not have this support.

Collaboration and Networking

Teacher leadership is relational and described in the literature as happening in the space in between individuals (Taylor et al., 2011; Woods, 2004). It is a function of the interpersonal relationships established in the organization (Harris, 2004) that are also responsive to the

individual (Emira, 2010). Teacher leaders in an organization work to build and capitalize on relationships and connections to collaboratively construct meaning (Muijs & Harris, 2006) and use relationships as the primary strategy to influence behavior of others (York-Barr & Duke, 2004). Informally, social interactions that occur in the work setting hold the capacity to influence behavior and, as such, become an important dimension to teacher leadership (Scriber, 2007). Teacher leaders affect change by influencing their peers through the collaborative relationships they establish (Brinkhurst et al., 2011; Harris, 2004; Muijs & Harris, 2006; Scribner et al., 2007; Taylor et al., 2011; Woods, 2004) and the networks they build. Networks positively influence and expand teacher leaders' circle of influence while improving morale and increasing their sense of self-efficacy (Muijs & Harris, 2006). Teacher leaders connect to others both within and outside of the school (York-Barr & Duke, 2004), creating opportunities to share information globally. "Network learning communities" (p. 12) stand as the distinction between the simple *act* of collaboration and the more important *product* of those interactions (Harris, 2004).

The teacher leadership model requires a shift from teacher isolationism traditionally seen in school settings to a culture that embraces collaborative learning (Taylor, et al, 2011) and collective responsibility (Harris, 2004). Collaboration is a key component in the discussion around teacher leadership and some have described it as the cornerstone to effective teacher leadership (Emira, 2010; York-Barr & Duke, 2004). Harris (2004) attempted to connect teacher leadership and school improvement by reviewing empirical evidence from two recent leadership studies as well as recent work on school improvement. Teachers' realizations that creativity is enhanced by collaboration and their willingness to openly and freely share their learning with their peers were identified as important findings in that work. The social nature of the construction of meaning and sense-making is well served by a culture of collaboration. Examples

of collaborative leadership include teachers attempting new strategies and sharing the results with others or engaging in action research (Harris, 2003). Collaboration that is non-hierarchical eliminates the leader/follower paradigm and therefore allows for the dynamic interchange of ideas and information from varying perspectives (Harris, 2003).

Collaboration that Shapes Policy. The term collaboration conjures images of a small group of teachers pouring over curricula manuals, referring to pacing guides and working together to develop lesson plans. Research indicates that there is something else at play, an underpinning of this process that reflects what happens between the policy decision and the implementation (Coburn, 2001). The current way of thinking about policy and its effect on teaching practice must also include a discussion of how teachers shape policy. Collaboration is a process where teachers construct meaning and develop shared understandings. Based on their previously held belief and practice, teachers filter information through lenses that change the way policy is understood, modified, or even ignored. According to Coburn (2001), they do this through the formal and informal interactions they have with each other within the context of their work environment. In these settings, teachers' conversations help them to develop a shared understanding and make decisions about which parts of the new learning will be implemented and which parts will be changed or even ignored (Coburn, 2001). Sometimes the sense that the teachers make of the information they receive does not reflect the policy makers' intention at all. Implementation based on those understandings serves to shape the policy itself (Coburn, 2001).

Informal Collaboration. While collaboration is typically thought of as a formal function, deliberately scheduled and orchestrated by formal leadership, there is much to be said about the spontaneous collaboration that is not scheduled but happens in informal settings on impromptu bases. Informal collaboration arises when groups of people come together voluntarily

to address an issue or need (Leonard & Leonard, 1999). A benefit of informal collaboration is that teachers who self-select their co-collaborators tend to work with those who value the same things they do. As a result, the team is more likely to tolerate diverging viewpoints and more easily able to reach consensus. Leonard and Leonard (1999) surveyed 92 teachers from three different schools in Canada, one K-6, one K-8, and one grades 10-12 to determine the single most influential source for change in their schools. Informal collaboration was rated more highly than planned collaboration, leading the researchers to posit that although planned collaboration is important, more effective collaboration develops spontaneously and voluntarily (Leonard & Leonard, 1999).

Coburn (2001) conducted research to investigate how teachers understand initiatives, decide which parts of the initiative to implement, and have collaborative conversations, both informal and informal, around the initiative. She conducted a qualitative case study using interviews and observations on a diverse school in California attempting to improve reading instruction. While this research is limited in generalizability due to the focus on a single case study, the depth of the data collected from both formal and informal observations makes it a credible source. Coburn (2001) found that teachers worked with different peers when collaborating informally than formally, a point that is relevant considering that their understanding of an initiative differed depending on with whom they collaborated. Observations of informal conversations revealed two types of discourse that led to deep engagement with the initiative, which Coburn (2001) codified as *In-facing* and *Out-facing*. *Out-facing* conversations took place when administrators or lead team gave teachers assignments related to the initiative that seemed disconnected from their efforts in the classroom. Their discourse switched from reflection on their assumptions and teaching practices to compliance as they attempted to meet

the requirements of the task. During this study, this phenomenon was evidenced in 12 out of the 27 observations of formal collaboration. Informal conversations observed consisted of almost all *In-facing* discourse, described as conversation around matters dealing with their practice, as teachers discussed matters that were more meaningful to them. Compared to *Out-facing* conversations in formal collaborative settings, subsequent classroom observations revealed evidence of the content of *In-facing* conversations. Ultimately, Coburn (2001) found that the understandings teachers take from an initiative are determined by whom teachers work with and whether the conversations are formally structured or informal in nature.

While much of the work presented thus far speaks to the effects of collaboration, Hargreaves (1994) looked deeply at the actual meaning of the word. Used to explain team-teaching and mentoring, the term *collaboration* has also been used to describe lunchtime chats or requests for materials or advice. Hargreaves maintained that the only thing those have in common is that teachers are talking or working together in some way and pressed to establish a better definition of the term by developing a basis for who controls the collaboration. Juxtaposing a collaborative culture within a school with “contrived collegiality,” Hargreaves delineated the two constructs by their locus of control, collaborative cultures emerging organically from the teachers themselves and contrived experiences orchestrated and controlled by administration or those other than the teachers.

| Collaborative Culture | Contrived Collegiality |
|---|--|
| Spontaneous: Erupt from the teachers themselves | Administratively Regulated: Teachers required to meet and work together |
| Voluntary: Not compulsory but arise because of determined value by teachers | Compulsory: Mandated peer coaching, team teaching, collaborative planning |
| Development-oriented: Teachers work on external change they selected or on change they develop themselves. | Implementation-oriented: Teachers required/persuaded to work together to implement the mandates of others |
| Pervasive across time and space: Not usually a scheduled activity | Fixed in time and space: Takes place at particular times in particular places |
| Unpredictable: Teachers are in control-outcomes may not be predicted | Predictable: Outcomes are highly predictable |

Figure 2. (Adapted from Hargreaves, 1994) Illustrates the opposing constructs of a collaborative culture versus contrived collegiality as described by Hargreaves, 1994.

The relevance becomes immediately clear when classroom observations reflect the informal discussion, excluding much of the discussion in the formal settings.

Collaborative Culture. In the previously mentioned explanation of “sustainability” by Coburn (2003), change is most easily sustained when teachers are supported with opportunities to continue professional learning by connecting with others both inside and outside of the organization. Harris (2003), in her discussion of teacher leadership through professional learning communities shares a premise of collaboration as less the act of collaboration and more a function of a collaborative culture in the school. In a collaborative culture, like-minded teachers converge and push for change, working together to solve problems that may arise (Fullan, 2005). They engage others in the work of school improvement and alter the culture of the school entrenched in isolationist and proprietary behaviors (Taylor, et al., 2011). Teacher leaders open

the doors to their classrooms to peers and lead professional development opportunities to create learning organizations.

Without cultures that are supportive, encouraging of positive relationships among staff, and reflective of a willingness to learn collaboratively, teacher leadership may not exist (Muijs & Harris, 2006; Taylor et al., 2011). Effective teacher leaders work in schools where teachers are encouraged to innovate and take risks and are actively involved in research (Muijs & Harris, 2006). School culture that reflects a high degree of trust, both in teacher leaders to develop reasonable innovation and in administrators to not take advantage has been identified in research on effective teacher leadership (Muijs & Harris, 2006). Trust happens in schools where teachers know each other well but may also be developed purposefully using activities to build teamwork. Even the work of improving a school together creates a culture of trust in a school (Muijs & Harris, 2006).

Collaboration in Context. Datnow, Park and Kennedy-Lewis (2012) took a decidedly different approach from Hargreaves, looking at the effects of collaboration that was carefully structured and orchestrated by administration around the use of data. Recognizing a gap in knowledge that this study also seeks to fill, these researchers sought to understand the day-to-day activities that teachers engage in as a result of data driven decision making (DDDM). They looked at four elementary schools and later, two high schools that were using the DDDM approach and were showing academic gains with a diverse racial, ethnic and socio-economic student population. Using a phenomenological case study approach, the researchers conducted central office and school site interviews, observations of classrooms and meetings including those within which teachers were discussing data and collected documents such as discussion protocols and school improvement plans. The data was analyzed and coded and the researchers

noted how “particular leadership activities and organizational features shaped teachers’ collaborative work with data” (p. 350). Their findings revealed common patterns among these highly successful schools and include structured time (by administration) for collaboration, prescribed (by administration) protocols for discussions around data and norms developed (by administration) regarding how the meetings were to proceed.

The common patterns that Datnow et al. (2012) found conflict with the research previously mentioned of Hargreaves (1994) and were directly addressed in their discussion of their findings. Datnow et al. (2012) discussed their findings in terms of “affordances and constraints”, concluding that each aspect could offer both an affordance and a constraint. These researchers reflected on the context of the organizations they studied and in their discussion, hypothesized about the same effort within a less supportive, poorly led organization. Context has some import worthy of more exploration in a conversation about effective types of collaboration.

Theoretical Frameworks: Sense-making Theory, Social Network Theory and Coburn’s Deep Change

Sense-making theory assists in developing an understanding of the how knowledge around an initiative is developed and then translated into culture, previously mentioned as important to systemic change efforts. Sense-making theory argues that the decisions teachers make while implementing initiatives are based on their preexisting assumptions and teaching practices (Coburn, 2001).

Schmidt and Datnow (2005) in their work to understand how emotion through social interaction impacts teacher understandings found that sense-making is affected by teachers values and emotions. They found that initiatives viewed on a classroom level generate more emotion than the same initiative viewed at the school-wide level. They found that as the

implications of the initiative approach the classroom, more emotions are generated, both positive and negative. Thus, the sense-making from the context of the classroom becomes an interaction between the teacher and the initiative. As teachers begin to make sense of the initiative within the context of their own classroom, they begin to incorporate the constructs and negotiate their own identity as it relates to the new learning. This process is heavy with emotion and reflects upon the moral values espoused by the teacher. The work of Schmidt and Datnow (2005) expands the idea of sense-making to conclude that it is a function of pre-existing assumptions and teaching practices and also an emotional response to a teacher's changing sense of self.

Formal leaders go through a similar process of sense-making and those understandings, in turn, affect teacher sense-making. Formal leaders draw from their own experiences and expertise to guide the context for teacher sense-making. Formal leadership makes decisions regarding which part of the initiative teachers will have access to and how those understandings are framed based on the congruence of the new concept and his or her own previously held assumptions about teaching and learning. Of particular interest is the impact formal leadership may have on teacher sense-making through social interaction. When teachers are allowed to work together to make sense of an initiative, they are exposed to varying viewpoints and are less likely to rely solely on their own pre-existing beliefs and to summarily dismiss tenants that are contrary to those beliefs. As previously mentioned in this paper in a discussion of informal collaboration (Coburn, 2001; Leonard & Leonard, 1999), structured activities created compliance related responses and were counterproductive in encouraging teachers to “question their assumptions, challenge their frames, and rethink their practice” (Coburn, 2005, p 499).

Sense-making theory is described as how school culture, including structures and routines arise from the “micro-momentary actions” of the participants as they develop understanding

around the initiative. The sense-making is collective in that it is understood through the social interactions of the participants as they engage with their environment (Coburn, 2001). These connections become of interest because meaning is constructed differently depending on who teachers are interacting with. Teachers build knowledge and negotiate meaning through collaboration and social networks. Social network theory, founded on the concept of social capital, is described as the connections through which resources of others may be accessed (Daly et al., 2010b). It is useful to “quantify and visualize the ties and overall structures of formal and informal networks” (Daly et al., 2010b, p. 360; Daly & Finnigan, 2010a). Social network analysis seeks to make apparent the structure of and connections between players of both formal and informal networks. Primarily concerned with the connections between individuals, social network theory relies on the structure or “configuration of positions and relationships” to analyze the behavior of individual actors (Sutano et al., 2011, p. 454). Informal leadership is revealed in an analysis of social networks because of its capacity to capture organic leadership as it arises (Sutano et al., 2011). Social network theory has been criticized for its unilateral focus on structure to the exclusion of an acknowledgement of the individual (Sutano et al., 2011).

Daly et al. (2010b) sought to determine the extent to which formal and informal social networks positively or negatively affect access and exchange of information within a district-wide reform effort, teachers perceptions of the positions through which reform efforts are dispersed, and the extent to which social network structures contribute to a sense of efficacy and job satisfaction. The researchers used social network analysis to gain an understanding of how networks affect reform efforts. Five schools were selected from an underperforming district near San Diego, which were engaged in a district-wide initiative to improve reading comprehension. One hundred ninety-six teachers and support staff were surveyed to ascertain, in part, the *density*

of ties within a grade level, *rate of interaction* as participants exchanged information, *reciprocity* within the grade level, and the *centrality* of each participant. The researchers determined that initiatives go through several filters, first the principal and then the grade level, and undergo changes and modification before implemented in the classroom. These findings may be more deeply understood upon reflection of the description of the kinds of modifications initiatives are subjected to as they are understood by teachers previously described in the work of Coburn (2001) as well as the construct of grade level teams as co-constructors of meaning previously described in the work of Datnow (2005). Top-down initiatives, then, may be represented in varying forms upon implementation, some of which may be contrary to the way the initiative was intended (Coburn, 2001). Daly et al. (2010b) explain that the social network in place in an organization contributes to the depth of implementation, a concept also reflected in Coburn's (2003) explanation of deep organizational change. Daly et al.'s (2010b) research also illustrates that the more social interaction within the grade level, the greater the emphasis on teaching and learning. They found that density of ties in a grade level was correlated to teachers' impressions of shared decision making. Density of connections also seemed to facilitate collaboration that was focus on deep implementation rather than the technical work of following mandates administration. Reminiscent of Coburn's (2003) assertion that organizational change includes the concepts of "depth, spread, sustainability, and shift of reform ownership", Daly et al.'s (2010b) work draws connections between the density of connections in a grade level to the "overall engagement, depth, and spread" of the reform initiative, indicating that social networks affect organizational change. Rarely seen in a review of the literature, Daly et al. (2010b) connects dense social ties in a grade level to improved student achievement.

Daly et al.'s (2010b) work helps to develop an understanding that social networks affect the ability of a grade level to understand and implement a reform initiative. In relation to the concept of teacher leadership, this research may be helpful in determining deeply connected individuals who may be instrumental in leading change in an organization through the dissemination of resources.

The reviewed literature shifts the focus of school reform from the outside and tops of organizations to the inside and bottom, closest to where the learning actually takes place. Defining teacher leadership as relationships that impact learning within the organization, the concept of collaboration in its many and varied forms becomes a recurring theme. The literature has shown how individuals within organizations understand and implement external initiatives or reform efforts and how they create movement within the organization itself through the processes of formal and informal collaboration. The literature has debated the importance of formal structures and protocols for collaboration while other pieces of work have indicated that true collaboration occurs when collaboration happens spontaneously and naturally. These collaborative relationships impact the individual as well as the organization, their influences reaching beyond the realm of organizational learning into the culture of the organization as a whole. From a practitioner perspective, the question that comes to mind and that is addressed in this study is, "Which forms of collaboration actually change the way teachers think about teaching and learning and create the deep, sustained organizational change aspired to and described in the research?"

Chapter 3: Methodology

A mixed methods case study, this research took a narrative inquiry approach, identifying patterns and structures that established a framework for effective collaboration within a school reform effort. Layering personal documents on to Social Network Analysis for depth, this study examined a site initiated reform effort from within the organization.

Site Selection

In order to better understand how collaboration impacts organizational change, this study was situated in a school that had already begun a grassroots change effort. In 2013, the district's school board developed a focus goal for the district to help stem the flow of middle school students out of the district to the local charter schools. The goal allowed for schools to start developing more innovative approaches to learning environments. The staff at Grand Avenue began exploration and internal discussion about shifting the instructional delivery model to project-based learning (PBL) and the possibility of becoming what the district called a "Specialty School" based on that PBL premise. After many rounds of surveys to ascertain consensus, one by the staff, one by the local teachers union, and one by EL Education, the vendor chosen to provide the professional development for the initiative, the staff appealed to and was granted permission and funding by the school board to become a PBL Specialty School.

The 2014-2015 school year was a planning year as Grand Avenue School prepared to launch their first year as an EL Education school in August of 2015. At the end of the school's planning year and before the school began the EL Education implementation, the site became the focus of a study examining how teachers conceptualize and operationalize teacher leadership (Van Lare & Liou, 2015). Interviews, focus groups, observations and a Social Network Analysis were conducted and provide both an external perspective and a potential quantitative baseline for

this study. The school remained a neighborhood public school, continuing to serve the students within its boundaries and not those students who may be set apart by an application process.

As mentioned previously, because Grand Avenue School was a neighborhood school and not a magnet, its demographics were representative of the area and were helpful in providing replicable results. Grand Avenue School's enrollment fluctuated but was reported by Calpads, downloaded from <http://www.ed-data.org/school> on 1/31/16 in 2014 as 693 students in grades kindergarten through 5. Of the total enrollment, 83% of the students were Socioeconomically Disadvantaged and 55% were English Language Learners. Eighty three percent of students identified as being Hispanic or Latino, 4% or 27 students, African American and 10% or 69 students, White.

The demographics of the teachers were markedly different from the students but not dissimilar from those of many schools in the district; 90% of the teachers were White, 11% or 3 were Hispanic. The staff was mostly seasoned, many of whom had more than 15 years experience teaching at Grand Avenue School. Two of the teachers were Teachers on Special Assignment (TOSA) and served in a coaching role on the staff. Several new staff members within their first few years of teaching had been hired to replace retiring teachers or those who opted out of the Specialty School. The commonality among all of the teachers was that they have each indicated their willingness to participate in the Specialty School model by signing an *opt in* agreement. Those who did not wish to participate transferred to other locations within the district.

According to findings from Van Lare and Liou's 2015 study, while teachers at the site indicate an understanding of the importance of their relationships in this change effort, an analysis of their social networks within the school do not support this priority. Steeped in years

of hierarchical, top-down command and control, teachers name the principal and two instructional coaches over their peers as most influencing their instructional decisions. Interviewed teachers indicated that they “just want someone to tell (them) what to do” (p. 23) (Van Lare & Liou, 2015) and expressed discomfort and anxiety at the expectations for experimentation and innovation. It is important to note that Van Lare & Liou viewed the coaches or Teachers on Special Assignments as administrative while this study places them decidedly in the teacher role. The coaches did not have classrooms yet they also did not have evaluation roles or decision-making rights that differed from any of the other teachers. Per district requirements, the coaches could not give feedback unless the teacher asked for it. In order to maintain positive and trusting working relationships, the coaches in conversations kept the confidentiality of the teachers with the principal.

Participants

This research took place with participants who had capitalized on the opportunity to exercise teacher voice in creating local change. Datnow and Stringfield (2000) discuss the importance of involving teachers in the change process and mention the deep organizational change that can happen as a result, positioning this study at the crux of an pivotal moment in the history of the change effort of this school and one that yields important information regarding teacher leadership for organizational change. The participants were grappling with meaning around professional development, offering researchers the possibility of observing teachers working to construct meaning around the initiative (Brinkhurst et al., 2011; Harris, 2004; Muijs & Harris, 2006; Scribner et al., 2007; Taylor et al., 2011; Woods, 2004) and effectively mediating policy as through their implementation (Rorrer & Skrla, 2001).

The purpose of the study, research questions and a description of the research methodology were given to the all teachers at the site in writing and explained by the principal/primary researcher at a staff meeting. In the document, assurances were made that willingness to participate was voluntary and would have no negative repercussions. Staff was made aware that the study was focusing on the successful and positive aspects and moments of collaboration. Staff was given an opportunity to indicate their willingness to participate at a later date. Any participant could withdraw from the study at any time.

Journal Participants. A convenience sample of 13 staff members at the site was selected based on their willingness to participate, to record their experiences of positive collaboration in journal entries.

Social Network Analysis Participants. A convenience sample of 35 staff members from all teaching staff members (including two Teachers on Special Assignment) at the site willing to participate was included in the Social Network Analysis.

Instrumentation and Data Collection

Electronic Journaling. First-person documentation of everyday life, through journal entries, was collected. This methodology was chosen first and foremost for its ability to balance power in the researcher-participant relationship, allowing the participant and the researcher to participate fully in the research process (Holbrook, 1995). It was also selected for its flexibility, as first-person documentation may be planned or unplanned, selected randomly or specifically, of any length and from a single contact to multiple contacts (Holbrook, 1995).

Participants were asked to identify moments of positive collaboration and write about them in an electronic journal. Prompts for the journal entries included “who were you working with, when and where did this experience take place, describe the experience and how did this

change the way you think about teaching and learning”. Participants were offered the option to include photographed artifacts of lessons or student work that reflected a particularly productive collaborative experience but none chose to do so. To ensure adequate data were collected, participants were provided with explicit directions regarding the types of information required while avoiding restricting responses. The journaling period was limited to 6 weeks in May and June, 2016 and the researcher checked in from time to time to encourage participation (Hayman, Wilkes, & Jackson, 2012).

Social Network Analysis. Teacher leadership is relational and is a function of the interpersonal relationships and networks within the organization (Taylor et al., 2011, Woods, 2004). “Social network analysis is a systemic approach used to quantify and visualize the ties and overall structures of formal and informal networks” (Daly et al., 2009, p 360). How many times an individual gets information from another individual, how many times an individual seeks information from another, and those who are most sought out for information may be easily recognized in a Social Network Analysis (SNA) and thus reveals networks that are typically invisible within an organization (Cross, Parker, & Borgatti, 2002). Van Lare and Liou (2015), in their study on the site, used SNA to identify patterns of relationships within the organization, citing the relational aspect of teacher leadership as their impetus. They gathered data on teachers’ collaboration network, asking teachers how likely they were to collaborate with each of their colleagues regarding their instructional practice, as well as on teachers’ influence network, asking teachers which of the staff was most influential to their instructional practice. A second SNA was conducted, using identical survey questions. The data was scrubbed of identifying features and used as extant data for this study. As with the previous survey, it was conducted by asking voluntary participants from the site to indicate their relationships with

others. A 15 question electronic survey was used to ascertain information about teachers' networks of collaboration and expertise seeking.

Data Analysis

Through an inductive analysis approach, the notes from the journals were read and reread to discern patterns or themes without the constraints imposed by more structured methodology. The data from the journal notes were reviewed alongside the SNA to add depth and aid in creating themes and developing deeper understandings. Transparent and defensible connections were drawn between the research questions and the findings to develop theories about what the data revealed (Thomas, 2006).

Extant data from the first SNA conducted by Van Lare and Liou (2015) revealed patterns in the ways in which teachers at Grand Avenue work together. A subsequent SNA data collection and analysis after a period of implementation and compared to journal responses reveal important information about the nature of organizational change, more specifically through collaboration. SNA made informal collaboration networks more visible and, when compared to journal entries, helped to ascertain with how and whom individual teachers felt the most valuable moments of collaboration happened. Due to the novelty of the SNA work, relative levels of density, reciprocity and connectedness could not be established. Rather, this study compares the metrics of the two networks studied against each other.

Chapter 4: Findings

This chapter explains the context of the study or background of the school reform effort to develop an understanding of the environment in which the results were created. The results of the Social Network Analysis will be presented, specifically around two key survey areas that are most pertinent to the study, namely, participants' tendency to collaborate and their expertise seeking within the organization. Key terms relevant to Social Network Analysis will be explained within the context of the results presented. Next, the findings from the coding of the journal entries will be presented. The chapter will conclude with a summary of results of the Social Network Analysis and the finding from the journal entries as they answer the research questions

What is the relationship between teachers' formal and informal networks and the school change effort? How does the participant's formal role or informal position in the network mediate the flow of information and or impact the depth of the collaborative conversations? What is the necessary context for deep, meaningful collaborative conversations in a school change effort?

Research Context

Grand Avenue School began their school reform effort with a year of planning before the actual changes were implemented. During that planning year (2015-2016), the staff discussed the school culture that would be necessary to realize the changes they wanted to make. The principal and the two coaches attended trainings on the new initiative and several teachers went on visits to sites that were already implementing the changes that were being considered. The school community collaboratively developed a set of principles or character traits that would be shared

by students, staff and parents and would build the foundation for the new initiative that would take place the following year.

The shift to a shared leadership model began when the principal began at the school, several years prior. The ultimate decision to move forward with the initiative as well as the development of the goals was shared with the teachers. The perspective of the site and district leadership was that Grand Avenue's reform effort was teacher led. It was during the planning year that Van Lare and Liou, interested in the teacher leadership aspect, came to the site to conduct interviews and collect the first round of Social Network survey data. Van Lare and Liou wrote a paper for presentation at a conference and quoted Grand Avenue staff discussing their feelings of connectedness and aspects of teacher leadership, quotes that are relevant to this study of collaboration and sense-making. The Social Network survey they used asked a variety of questions, two of particular interest to this study, one about collaboration and the other about expertise seeking. This data, collected in the planning year before the initiative began, became the baseline for this study.

The following year, Grand Avenue began the implementation of their change initiative. Using EL Education as a resource, the school set goals to continue working on school culture and to change their instructional delivery model. The principal and coaches continued to receive training but now more teachers were also attending workshops and a trainer from EL Education was coming to the school to deliver on-site workshops and coaching. Similar to the previous year, each grade level was released for 90 minutes each week to collaboratively around the new changes. The principal scheduled the collaboration time and teachers were required to attend, fitting Hargreaves's description of "contrived collegiality". The principal required the teachers to 1) develop common, student-friendly learning targets, 2) produce common formative

assessments and 3) bring student work samples or assessments back every 3-4 weeks for analysis. Each grade level worked with one of the two coaches who helped to facilitate these tasks. The 90 minutes of collaboration time was in addition to the staff and professional development meetings that occurred once a week on an early release day. As teachers started to develop expertise with the new approaches they were being taught, they presented videoed lessons and shared strategies they had successes with during the staff and professional development meetings.

Opportunities for more informal collaboration were incorporated into the school schedule. Teachers had previously been responsible for monitoring the students during the school's 20 minute recess break and the principal reallocated funds to allow the noon supervisors to cover the recess break, permitting all teachers to take a break at the same time. The lunch schedules had previously been staggered so that each grade level had lunch at a different time. The lunch schedules were rearranged so that consecutive grade levels went to lunch together. Consequently, teachers from consecutive grade levels could have their lunches together, as well. After the initiative had been in place for approximately one school year, a second identical Social Network survey was given to the staff. Participants also journaled once every 2 weeks for 6 weeks, commenting on the most effective collaborative moments they had experienced. This additional layer of data allowed for a comparison between staff social networks before the initiative and after a year in implementation along with the depth of the qualitative comments in the interviews and journals made before and after implementation, as indicated in Figure 1.

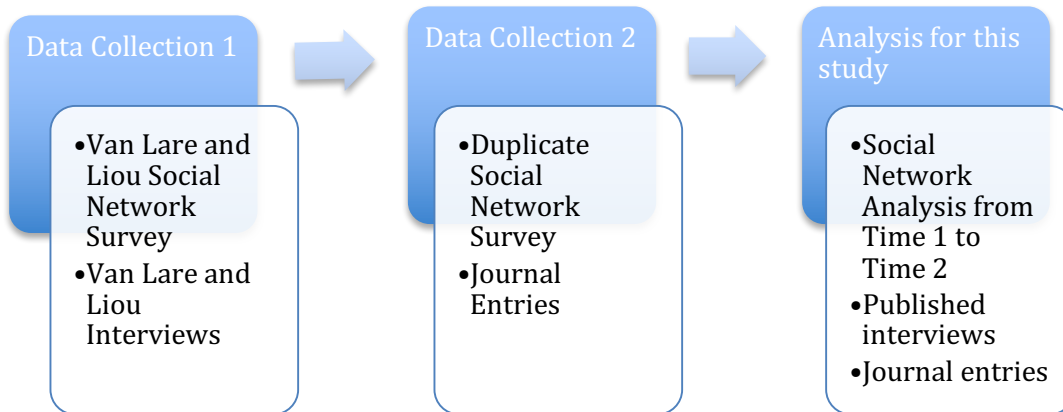


Figure 3. Illustrates the methodology used and timeline involved in this study.

This study analyzed the structure of both the formal and the informal collaborative and expertise seeking networks in the organization through an analysis of the school's social networks. Specifically, participants' *tendency to collaborate* and their *expertise seeking* were analyzed to ascertain the flow of information throughout the system. The data were collected prior to the implementation of the change initiative and again after the initiative had been in place for 10 months. Participants also journaled about their positive collaborative experiences and those entries were paired with the sociograms in an effort to shed light on the depth and scope of the interactions taking place. This study also had the benefit of access to a previous study that had been conducted at the site (Van Lare & Liou, 2015) on the subject of teacher leadership. That study broached the field of collaboration and quotes from Grand Avenue teachers published in their paper is of value and included in this data set.

Social Network Analysis

The next section discusses the results from the Social Network Analysis specifically around participants' *tendency to collaborate* and then their *expertise seeking*. Then, the findings from the interviews and journal entries are discussed before the nexus of the two forms, quantitative and qualitative are combined and assertions are made regarding key findings.

Tendency to Collaborate. Participants were asked in the Social Network survey how likely they were to collaborate with colleagues about their instructional practice. They were given a list of all colleagues within the organization to select from and the sociograms include only those participants who were selected as someone a colleague was “likely” or “highly likely” to collaborate with. The data from the survey were fed into Netdraw software that generated network sociograms, or visual representations of the social networks within the school. UCINET 6.0 was then used to calculate the network measures of collaboration that aid in interpreting the sociograms. Network density and reciprocity were calculated on the whole school level and individual’s outdegree, indegree and ego-reciprocity were used to measure their connectedness. Outdegree may be described as the number of colleagues a person indicates that they are likely or highly likely to collaborate with (and seek expertise from). Indegree, on the other hand, is the number of times a person was nominated by others as someone that they were likely or highly likely to collaborate with (and seek expertise from). Both outdegree and indegree are reported from the ego perspective. Consequently, outdegree may be thought of as how outgoing an actor is and indegree, how popular the actor is (Van Lare and Liou, 2015).

Density of collaborative network. Network density is a calculation of the overall number of present ties divided by the overall possible ties. The density of a network reflects the connectedness or cohesion of a network (Blau, 1977). Well-connected networks are able to move resources more quickly through its system than less connected networks (Scott, 2000). The values range between 0, indicating no relationships between actors to 1, representing a social network in which every actor is connected to every other actor in the network.

The data collected in the first sampling or Data Collection 1 (DC 1), as demonstrated by both the sociograms and the supporting metrics indicate a density of 0.30 in this collaborative

network. Of all the possible combination of ties, 30% were realized. There are no isolates identified in the maps; participants were connected to at least four others in the network, either by outdegree or by indegree. However, the sociograms identified staff members who were on the periphery of the network and not as central to the collaborative network, both in indegree and outdegree.

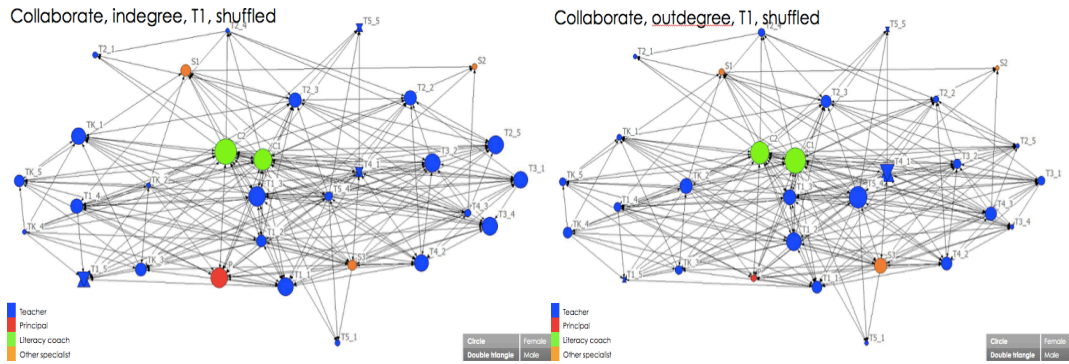


Figure 4. Collaborative indegree and outdegree sociograms at Data Collection 1 illustrating the density of the network.

Reflective of the survey results, teachers were quoted in Van Lare and Liou (2015) representing a feeling of isolation. One Grand Avenue teacher states

“As a [grade-level] teacher, I am isolated...I don’t see anyone in the whole school except for our random Thursday meetings. I don’t have any conversations with anyone else in the building.”

The second time the data were collected, Data Collection 2, the density of the network increased by 4% ($D=.34$ or 34%). The level of connectedness measured in Data Collection 1 was 77% and had grown to 83% by Data Collection 2. The sociograms took on a more rounded, cohesive shape as staff members who were previously on the periphery were drawn toward the center by their increased nominations.

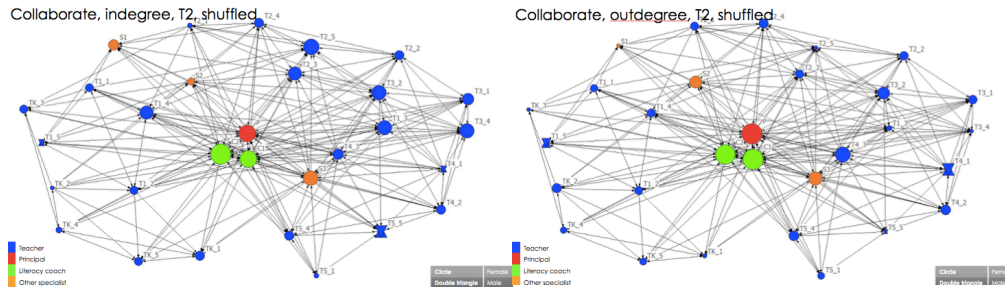


Figure 5. Collaborative indegree and outdegree sociograms at Data Collection 2 illustrating the density of the network.

Key actors in the collaborative network. Several key staff members are identified as people others are likely or highly likely to collaborate with. They are located in the center of the sociogram and are connected across the network. Both of the coaches in Data Collection 1 were identified on the indegree sociogram as staff members whom others were likely or highly likely to collaborate with. Their central location on the sociogram indicates that staff members sought them out across the network. They were also central in the outdegree sociogram depicting them as actors who were likely or highly likely to collaborate with many others. Several teachers, who had no formally assigned leadership roles in the organization, were also identified as central both these networks in Data Collection 1.

There are other notable shifts as some teachers who were not frequently identified as collaborators in Data Collection 1 became key collaborators in Data Collection 2 and some who were key in Data Collection 1 faded into the periphery. Teacher 4_3, Teacher 5_5 and Support Provider 3 played a limited role at Data Collection 1. However, in Data Collection 2, they became key actors, team members that were frequently nominated as those teachers were likely or highly likely to collaborate with. Teachers 1_5, 1_5 and K_1, all identified as key collaborators in Data Collection 1 received notably fewer nominations in Data Collection 1.

These changes represent a shift in actors' preference for collaboration partners as the change initiative advanced.

Looking across the multivariate levels of sociograms, T1_3 is a key collaborator in terms of both indegree and outdegree in Data Collection 1. The second time the data were collected, later in the implementation, T1_3 continued to be prevalent in indegree but her presence appeared to diminish significantly on the outdegree sociogram. In other words, T1_3 was a teacher who was a key player in the network. Many staff members indicated that they would collaborate with her and she indicated that she would collaborate with many others before the initiative began. After a year of implementation T1_3 remained someone who others were willing to collaborate with. However, she became less willing to collaborate with others. At this point, it is helpful to view the sociograms that arrange the teachers by their grade levels. When the sociograms are arranged by grade level, it is clear that members from each grade level are connected to members from other grade levels and sometimes members from within their own grade level are excluded from the grade level's collaborative network.

Reciprocity of the collaborative network. Networks that are highly reciprocal have been associated with the exchange of complex knowledge and increased organizational performance (Kilduff & Tsai, 2003). The percentage of all ties in the Grand Avenue collaboration network that were reciprocated divided by all the possible ties was 27% at the first data collection (Network Reciprocity =.27). Those relationships were more reciprocal than T1, measuring 40% at T2 (Network Reciprocity=.40).

Expertise Seeking. Participants were asked how frequently they interact with colleagues whom they considered to be a reliable source of expertise related to their instructional practice. Only the colleagues who were identified as at least a weekly interaction were mapped. Similar to

the previously mentioned collaborative network, the data from the question related to expertise seeking were fed into Netdraw software that generated network sociograms, or visual representations of the social networks within the school. UCINET 6.0 was then used to calculate the network measures of expertise seeking that aid in interpreting the sociograms. Network density and reciprocity were calculated on the whole school level and individual's outdegree, indegree and ego-reciprocity were used to measure their connectedness. The collaborative network may be seen as the organization's potential to collaborate because the survey question asks how likely the participants are to collaborate with a specified colleague. In contrast, the expertise seeking network is understood as the potential actualized as the survey questions asks how many colleagues the participant has sought expertise from.

Density of Expertise Seeking Network. As previously discussed in the collaboration network explanation, density is a calculation of the overall number of present ties divided by the overall possible ties. The density of the expertise seeking network at Data Collection 1 was .19, comparatively lower than the collaborative network (.30). The sociogram identified no isolates but there were actors on the periphery with limited ties. The second time the data were collected, the density of the network decreased by .18. As reflected on both the indegree and outdegree sociograms, actors on the periphery became even more isolated, receiving fewer nominations and seeking expertise from others less than in Data Collection 1. By Data Collection 2, Support Provider 2 had now become an isolate.

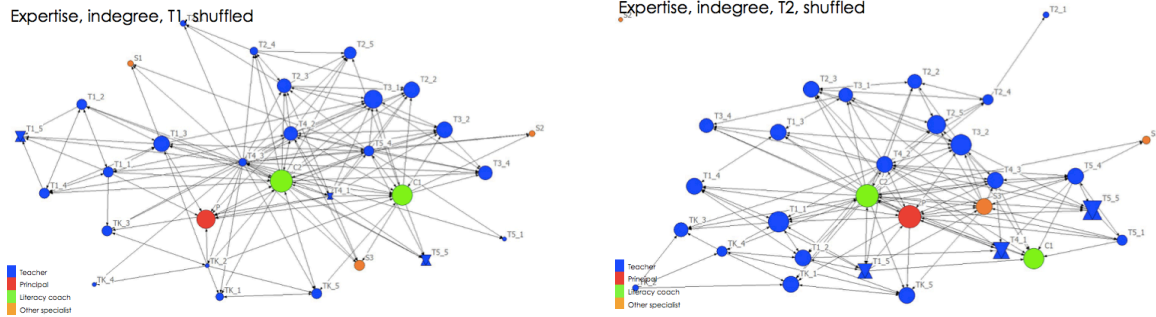


Figure 6. Indegree expertise seeking sociograms at Data Collection 1 and Data Collection 2 are comparatively less dense than the collaborative sociograms in Figures 4 and 5. At Data Collection 2, the sociogram on the right demonstrates an isolates and several st

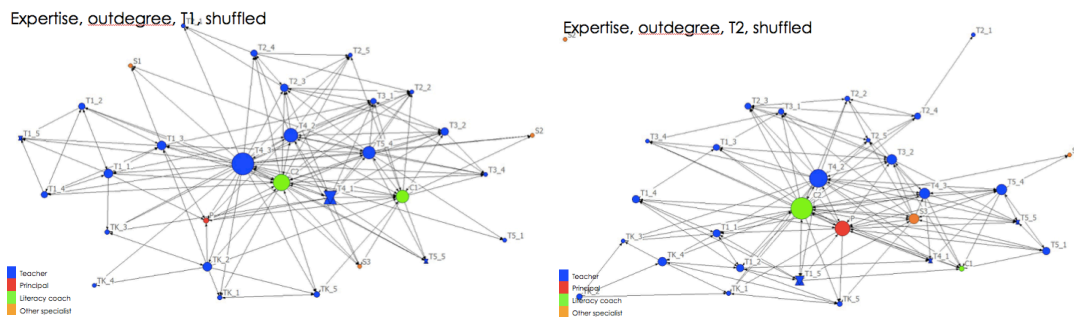


Figure 7. Outdegree expertise seeking sociograms at Data Collection 1 and Data collection 2 also demonstrate a less dense network than the Collaborative network represented in Figures 4 and 5.

Key actors of the density network. Similar to the process used in the collaborative network, key actors are determined by their centrality in the network and the size of their nodes. The coaches remain key actors in Data Collection 1 as indicated by their large nodes and their location on the sociograms. Each coach was assigned to work with clusters of grade levels, primary or upper and this is reflected on the grade level sociograms as one coach's node was located closer to the primary grades and the other, closer to the upper grades. The teacher previously mentioned in the collaborative network section, T1_3 appears again in the expertise seeking sociograms as central in indegree but less so in outdegree.

The same pattern of high nominations in indegree but fewer selections of outdegree are revealed in Data Collection 2. Interestingly, when comparing the indegree sociogram to the

outdegree for Data Collection 2, there appears to be significant discrepancies between the two maps for key actors. As shown in Figure 4, the sociograms for expertise seeking reveal that key actors are more prominent in the indegree maps than the outdegree maps. Notably, one of the coaches, identified as a central, key actor in all networks has many colleagues seeking her expertise but by Data Collection 2, the same coach identified very few staff members that she sought expertise from on a weekly basis or more. In other words, many staff members were coming to this coach for expertise but she was reaching out to few to gather expertise for herself. The same may be said for other informal leaders identified in the table.

There were some significant shifts in teachers' popularity (indegree) in regard to expertise from Data Collection 1 to Data Collection 2, similar to the pattern reported in the collaboration network. For example, Teacher T5_5 and Teacher T3_2's nodes grew to the size of the coaches' in Data Collection 2, a significant increase from Data Collection 1.

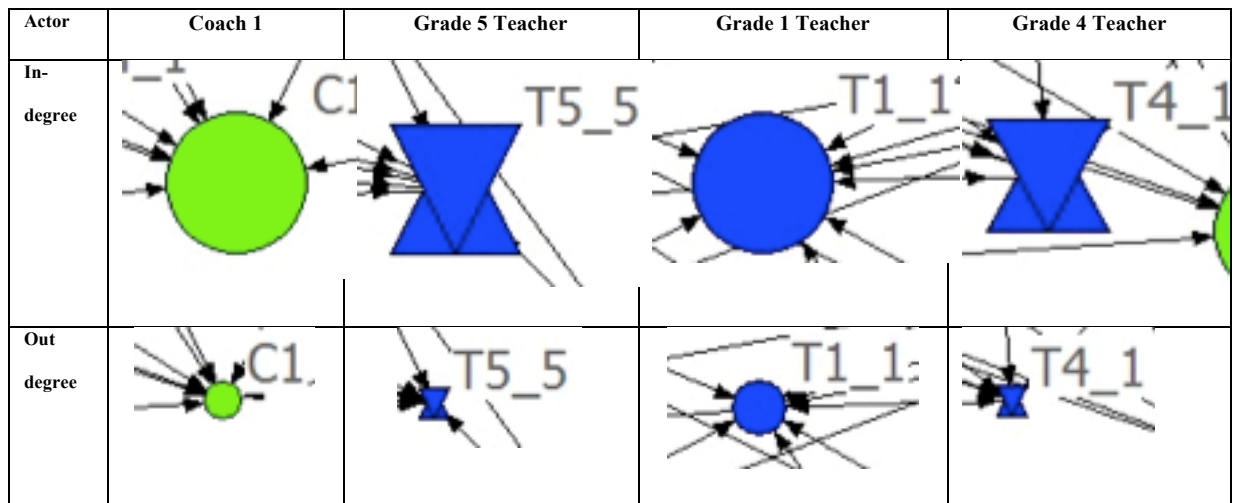


Figure 8. Illustration shows the actual node size for the same actors in their expertise seeking and compares their indegree nominations versus their outdegree activity. Larger node size indicates more nominations or more activity and smaller node sizes indicate.

Reciprocity of expertise network. The percentage of all ties in the Grand Avenue expertise seeking network that were reciprocated divided by all the possible ties was 25% at the

first data collection (Network Reciprocity =.25). That measure increased in Data Collection 2 to 33% while the connectedness of the network decreased from 71% to 63%.

Journal Entries

Participants journaled about their positive moments of collaboration at the end of the first full school year of implementation of the new initiative. They responded to the following prompt three times over the course of six weeks.

Describe an interaction that you consider to be valuable. Describe the experience. Who were you working with? When and where did this experience take place? Why do you consider it to be “valuable”? Did this interaction change the way you think about teaching and/or learning? If so, how?

While two of the newer teachers wrote about experiences they had outside the organization, the rest of the entries were from Staff Meetings, Grade Level Meetings, Collaboration Time, Unassigned Thursdays or during breaks. Staff Meetings were cross grade level and most often devoted to professional development and planned by the principal and the coaches based off of the initiative goals developed by the lead team and EL Education. Grade Level Meetings were 90 minutes and had an agenda developed by the principal. About 45 to 90 minutes of the agenda were devoted to “Grade Level Topics” to be determined by the teachers. Collaboration time was a 90-minute period of time where teachers met as a grade level with a coach. There was no agenda developed by the principal. Rather, there was a set of expectations for outcomes that included 1) common learning targets, 2) common formative assessments matching the learning targets and 3) analysis of student work or assessments every 3-4 weeks, referred to as “data teams. Activities during Unassigned Thursday and breaks were solely at the discretion of the teachers.

Depth. Coburn (2003) Describes *Depth* as deep change that alters “teachers’ beliefs, norms of social interaction, and pedagogical principles” (p. 4). Well beyond simple procedural

changes, depth involves challenging underlying assumptions teachers possess about student learning and effective instructional delivery. It entails changing the way in which students and teachers interact with each other as well as the way students and teachers perceive and engage with the new materials. The journal entries were coded using an adaptation of Coburn and Russell’s (2008) rubrics for level of depth.

Table 1. Coburn’s Levels of Depth

| Level | Descriptor |
|----------------|--|
| Low: | Talk related to one or more of the following: how to use materials; how to coordinate the text, standards, assessments, and pacing guides; how to organize the classroom sharing materials or activities; general discussions of how a lesson went or whether students were getting it. |
| Medium: | Talk related to one or more of the following: discussions of how lessons went, including a discussion of why; detailed planning for lessons, including a discussion of why; specific and detailed discussion of whether students were learning (but not how students learn); discussions of instructional strategies in the context of observations; doing student work together with discussion |
| High: | Talk related to one or more of the following: pedagogical principles underlying instructional approaches; how students learn, or the nature of students thinking; learning principles or concepts |

A majority of the experiences that staff members characterized at positive moments of collaboration could be described as a low or medium level of depth. The conversations focused around selecting standards and text, organizing and pacing of lessons, and the sharing of materials and strategies. One teacher explained her collaboration with a colleague to find activities that matched the standards and followed pacing.

We met and talked about the standards of geometry and then searched the internet on the best way to intro the majority of the geometry ides. We decided to do a lap

book that covered most of the standards. We discussed how we would use the lap book interactively with the students. We also came up with how to identify different geometry pieces out on the playground, A Geometry Hunt to put it into concrete knowledge. That was great for me because it ensured that I was on track and teaching what I was supposed to be teaching.

Another teacher explains the time spent organizing and planning for the school year and selecting text.

We discussed the planning and organization for the 2016-2017 teaching year. This was important because it helped outline the important textbooks and schedule we would integrate and follow for the English Language Arts portion of our instruction. We were able to review the textbooks that would engage our students most, and how that can apply to our unit goals.

Occasionally, conversation about a lesson would including a discussion of why it went the way it did and what would be done to change the outcome for next time, as evidenced in this Medium depth level exchange.

This week I was talking with Natalie Sims in our shared workroom space. The conversation started during morning recess time (about 5 minutes) and continued after school (about 15 minutes). I shared about my experience with a 2.0 EL lesson. My class had completed the first half of the lesson and the second half would be the next day. We talked about how my delivery was different than in previous times due to how we scripted it during the last grade level collaboration time. This was an important time for me to share the results of the grapple, what the common misconceptions were and how I wanted to shape the lesson for the next day. I appreciated her feedback and observations as well as her suggestions to make my lesson even more effective.

The notable exception, when the collaborative conversations reached the level of depth that Coburn and Russell (2008) would characterize as “deep, was when a coach was present and asking probing questions.

I asked the team, “ What was meaningful about this expedition for your students and why is it worthy to do again next year? What were the stars and steps?” Lots was shared but it was a common conclusion that the rigorous and rich text along with personal relevance were the two key factors of making this expedition meaningful and engaging.

This deep level of collaborative conversation was also found when someone on the team, even though not formally designated as “coach”, took a coaching role, as demonstrated in the excerpt below.

One meeting that sticks out in my mind is when the fourth grade had a collaboration day and we looked at our math data and determined that many of our students were deficient in numbers and operations. We decided to try and introduce some CGI problems that would help strengthen skills in the areas that were lacking. Prior to the meeting, I had created some problems for the teachers to give to their students daily. At the meeting we reflected on the answers our student gave and their mathematical thinking. Next we tried to sort them into groups of like-minded thinking and discussed the reasoning for our grouping. We followed that by reading a scholarly article about cognitive guided instruction and revisiting our groupings. We looked at different types of problems we could write to build their mathematical thinking and committee (committed) to writing and contributing one each week.

The prompt asks respondents to discuss if the positive moment of collaboration changed the way they thought about teaching and learning. All but three of the responses omitted that part of the prompt, two stating that the experience did not change the way they thought and one explaining a pedagogical shift in his thinking around a student centered versus a teacher centered classroom.

Group versus One-on-One. The two main categories of time that participants wrote about were time spent with a group, most often their grade level and time spent one-on-one with a colleague. Comparing the content of the conversations against each other, participants frequently mentioned adhering to norms, sharing responsibility for the workload, determining standards and accompanying texts, organizing, calendaring and planning when they were working in groups. One-on-one conversations were mostly about changing lesson plans during or after instruction, in the moment responses to formative testing, and giving or receiving peer feedback. Notably, all of the one-on-one conversations except one were with long-established

relationships, current or previous teaching partners that spent time together outside of work and were reciprocal in both the collaboration and expertise seeking sociograms.

As previously mentioned, networks that are highly reciprocal have been associated with the exchange of complex knowledge and increased organizational performance (Kilduff & Tsai, 2003). In the collaboration network, relationships were more reciprocal in Data Collection (.20) than Data Collection 2, measuring 40% (Network Reciprocity=.40). Reciprocity also increased in the expertise networks from .25 to .33 at Data Collection 2. The increase was reflected in the Journal entries, as well. Participating collaboration partners wrote about the same moment of collaboration, shared between them, as illustrated below.

April 19, 2016

Charlene Beaty and I collaborated on Tuesday, April 19th on a 2.0 lesson in math. We met in Charlene's classroom. Charlene had planned a grapple that was a story problem the students needed to draw. She had already completed the lesson but the lesson had not gone as well as she had hoped. Charlene had ideas on how to change the prompt to make it more understandable to the students. We discussed how to change the word problem, and then I was able to change my lesson plans to show the new prompt. This was very helpful to me in planning my lesson. We brainstormed our next 2.0 prompt using this information.

Then, from her collaboration partner

April 21, 2016

This week I was talking with Nina Semanski in our shared workroom space. The conversation started during morning recess time (about 5 minutes) and continued after school (about 15 minutes). I shared about my experience with a 2.0 EL lesson. My class had completed the first half of the lesson and the second half would be the next day. We talked about how my delivery was different than in previous times due to how we scripted it during the last grade level collaboration time. This was an important time for me to share the results of the grapple, what the common misconceptions were and how I wanted to shape the lesson for the next day. I appreciated her feedback and observations as well as her suggestions to make my lesson even more effective.

Collaboration Defined. It is important to recognize that the meaning of collaboration was not defined for the participants. An analysis of the journal entries revealed that the most

common and least common words used when describing positive moments of collaboration include the words listed in Figure 9.

| Most frequent words mentioned | Least frequent words mentioned |
|--------------------------------------|---------------------------------------|
| Discuss: 40 | Pedagogy: 1 |
| Time: 37 | Voice: 1 |
| Help: 31 | Relationships: 1 |
| Lesson: 30 | Feedback: 1 |
| Level: 25 | Trust: 1 |
| Share: 25 | Transparency: 1 |
| Idea 25 | Risk: 1 |
| Use: 22 | Clarity: 1 |
| Talk: 21 | Routines: 1 |
| Plan: 20 | Realigning: 1 |
| Think: 17 | Analyze: 1 |
| Make: 15 | Trends: 1 |
| Instruction: 13 | Mistakes: 1 |
| Teach: 12 | Advice: 1 |

Figure 9. Identifies the least and most prevalent words in the participants’ journals and indicates their frequency.

The Grand Avenue staff appears to operate under an assumed definition of collaboration that is more about standards and text, organizing and pacing of lessons, and the sharing of materials and strategies than the activities associated with deeper levels of collaboration.

Summary of Findings

A central finding is that teacher leaders, both formal and informal were central to the school reform effort and mediated the flow as well as the depth of information exchanged. Both coaches were frequently nominated as colleagues whom staff was likely or very likely to collaborate with and identified as those whom teachers sought expertise from weekly or biweekly and at both Data Collections. Other teachers who did not hold the formal role of coach emerged in both the collaboration and expertise networks as key actors. Journal entries reveal Low to Medium levels of depth of collaborative conversations until the coaches moved the conversation to a High level. Deeper levels of collaboration were also noted when teachers who did not hold the title of coach assumed the behaviors associated with coaching. These findings indicate that in this organization, teacher leadership emerged without formal role assignments.

Key actors or teacher leaders had the ability to mediate the flow of information. The sociograms generated by the survey questions around collaboration and expertise seeking reveal an organization that became more connected (Collaboration: 77 to 83 and Expertise: 63 to 71) and more reciprocal (Collaboration: 27 to 40 and Expertise: 25 to 33) in their relationships as they grappled with the new change initiative. As the density of the networks increased, the organization built capacity to pump new information throughout the system. In certain key areas, however, that flow of information was hindered. As illustrated in Figure 4, Coach 1 and 3 key teachers who were central in the expertise network were frequently sought out for their expertise. As teachers were learning about the new strategies in practice, these key actors became the conduit through which new information could flow through the system and double loop learning could take place. Yet the sociograms reveal that these key actors reached out to relatively few others within the network for their expertise. In other words, participants were coming to these

key actors for information but these teachers had effectively limited their access to information by not reaching out to others in the organization for their expertise.

Key actors shifted as they initiative progressed. The sociograms indicate that between Data Collection 1, which occurred before the initiative began and Data Collection 2, key actors did not remain constant. Some colleagues that were nominated as actors others were likely or highly likely to collaborate with in Data Collection 1 became less relevant in Data Collection 2 and were replaced by other colleagues. The same phenomenon occurred in the expertise network; some key actors in Data Collection 1 were replaced by others in Data Collection 2. Why these changes occurred are beyond the scope of this study but what is clear is that, while in the midst of this change initiative, some new key actors rose to replace previous key actors that declined in popularity.

Participants were much more likely to mention someone they might collaborate with than to identify someone they had actually sought expertise from. Density, the characteristic of a network that has been shown to move resources more quickly through a system (Scott, 2000), was significantly different between the two networks, collaboration and expertise seeking. The collaborative network measured .30 at Data Collection 1 and grew to .34 at Data Collection 2. However, the expertise seeking network which measured .19 at Data Collection 1 and decreased to .18 at Data Collection two. It is important to note that the collaboration survey question asked about participants' propensity to act while the expertise survey question asked about the participants actual acts.

It is also important to recognize that the meaning of collaboration was not defined for the participants. To develop an idea of what the term meant to the participants, an analysis of the journal entries was conducted to reveal the most common words used when describing positive

moments of collaboration. Grand Avenue teachers most frequently used words associated with lower levels of collaboration and that reflected an assumed definition of collaboration that revolved around the sharing of plans and materials and the scope and pacing of lessons.

Chapter 5: Discussion

The purpose of this study was to examine a site-initiated change effort to understand how formal and informal collaboration impacts teacher leadership and learning, as well as teachers' capacity to affect the organization and its reform efforts. The study sought to uncover the relationship between teachers' formal and informal networks and the school reform effort. Using Social Network Analysis and journal responses from the participants, one could ascertain not only the networks at play within the organization but also the depth of conversations that were happening within those networks. This mixed methods approach revealed several central findings in relation to the research questions.

The first two research questions ask, "What is the relationship between teachers' formal and informal networks and the school change effort?" and "How does the participant's formal role or informal position in the network mediate the flow of information and or impact the depth of the collaborative conversations?" A central finding is that *coaches in both formal and informal roles were central to the school reform effort and mediated the flow as well as the depth of information exchanged*. As previous literature bears out, teacher leaders who are given permission and authority to lead, clearly defined roles negotiated by the teacher and the formal leader (Emira, 2010; Taylor et al., 2011; York-Barr & Duke, 2004), and encouraging support (Akert & Martin, 2012) are more likely to experience success than those who do not have this support. The coaches became the conduit through which new information could flow through the system and double loop learning could take place.

Interestingly, teachers who had not been given formal permission through an assigned role also had the capacity to move collaborative conversations to the deeper levels. This finding is in agreement with previous research that asserts that leadership role shifts from the formal

leader to formal or informal groups of invested teachers who have the knowledge and skill to address the particular challenge that has arisen (Emira, 2010; Muijs & Harris, 2006). Teacher leadership roles may not be a formally recognized within an organization (Emira, 2010; Taylor et al., 2011; Muijs & Harris, 2006), effectively creating space for leadership to arise organically from those not appointed as leader.

Key actors or teacher leaders also had the ability to mediate the flow of information. This is an important point because, as teachers are collaboratively engaging with the initiative, they are developing a deeper sense of what the new strategies mean to them and for their students (Coburn, 2003). This new adult learning is happening closest to where student learning is actually happening, positioning these teachers as lead learners (Coburn, 2001; Datnow, 2006; Datnow & Stringfield, 2000, Tucker et al., 2014). Key actors who are only giving information and not actively seeking it are limiting the flow of information throughout the system.

Key actors shifted as the initiative progressed. This premise aligns with previous research that states that leadership may arise from anywhere in the organization, depending on the knowledge and skills possessed by the teachers. Teacher leadership comes from a position of expertise rather than from rank or title and focuses on knowledge rather than position (Hatcher, 2005; Emira, 2010). This knowledge may reside in a specific person or persons in one context or situation and then from others, as the situation changes (Emira, 2010; Kezar, 2012). The change initiative brought with it a set of skills that some teachers were immediately more adept with than others, creating a shift in key actors from those that held talent previously in demand to those with the new skill set. Interestingly, this study found that the actors formal or informal role impacted the initiative and conversely, that the initiative impacted the actors' formal and informal roles.

Lastly, this study sought to understand the necessary context for deep, meaningful collaborative conversations in a school change effort. The research revealed that *participants were much more likely to mention someone they might collaborate with than to identify someone they had actually sought expertise from*. The difference between these two networks, in this case, drew a line between collegiality and the deep, impactful work of learning from and sense-making with colleagues. The significant differences in density between the two sociograms, collaboration and expertise indicate a cordiality or collegiality but a hesitance to fully embrace the potential to realize collective pedagogical change. The journal entries coded for Depth and identifying mostly Low and Medium levels demonstrate a staff who is planning, organizing and sharing materials rather than discussing the how students learn and think and challenging the pedagogy surrounding the practices they are using. Another possible explanation for the lower density values for the expertise seeking networks is that staff may not have known where the expertise was being developed in the organization.

One-on-one collaboration compared to grade level collaborations differed in that they were always informal and the partners were self-selected. The conversation in the one-on-one collaborations were more responsive to and connected with teachers' efforts in the classroom and more prone to produce actionable feedback for the participants. This type of interaction Coburn (2001) identified as "in-facing" or those that were meaningful to teachers practice and resulted from informal opportunities to collaborate. She compared these conversations to those that were "out-facing", describes as focusing on compliance and resulting from administrator-initiated agendas that seemed disconnected from current teaching practice. The interesting note is that the one-on-one collaborations were with self-selected partners with long standing relationships in this study. Reflecting back on a Grand Avenue participant's response from Van Lare and Liou's

(2015) interviews. “I think part of coming together as a staff is developing relationships that are not necessarily based on what we’re teaching...I don’t think we’ve personally had that opportunity to get to know each other.” This is an important distinction as teacher leadership is relational and is a function of the interpersonal relationships within the organization (Taylor et al., 2011; Woods, 2004). Teacher leaders influence change primarily through collaborative relationships with peers (Brinkhurst et al., 2011; Harris, 2004; Muijs & Harris, 2006; Scribner et al., 2007; Taylor et al., 2011; Woods, 2004) and influence the initiative in the way that they form collective understandings and implementation strategies.

Harris (2003), in her discussion of teacher leadership through professional learning communities shares a premise of collaboration as less the act of collaboration and more a function of a collaborative culture in the school. In a collaborative culture, like-minded teachers converge and push for change, working together to solve problems that may arise (Fullan, 2005). They engage others in the work of school improvement and alter the culture of the school entrenched in isolationist and proprietary behaviors (Taylor, et al., 2011). In order to reach this deeper state of collaboration, teachers must have strong relationships that are conducive to this level of interaction (Akert & Martin, 2012; Harris, 2006; Muijs & Harris, 2006; Taylor et al., 2011; York-Barr & Duke, 2004). It is evident that strong, personal relationships are a necessary environmental element for Grand Avenue teachers to build a collaborative culture within their organization.

In summary, key findings from this research are

1. Formal and informal coaching roles had the ability to mediate the flow of information throughout the network and to push the work of collaboration to levels that impacted pedagogy and teachers thinking about teaching and learning.

2. Leadership emerged, shifted and changed as the need presented itself and the participant had the knowledge and skills to meet it.
3. One environmental or contextual aspect required for a deep, collaborative culture to emerge at Grand Avenue School was strong, personal relationships.

Limitations

This study was limited as it was difficult to generalize the findings to larger populations. Rather, the results were an attempt to describe in detail the case and its context, providing evidence from the data collected. The scale of this study was small, only taking into account the experiences of one school in its first year of a change effort. Other limitations include access to anonymously submitted information by the researcher, as direct supervisor (principal) of participating staff. Attempts were made to limit the participants' exposure to potential harm by prompting for only positive moments or interactions of collaboration as opposed to when collaboration failed to occur or were negative. Identifying information from the SNA extant data such as teacher name was removed although demographic data such as gender gave the researcher some clues as to the participants' identity. This possibility was disclosed to participants.

Implications for Practice

This research concluded, as others in the past have that leadership may emerge from anywhere in the organization and as the needs arise. Re-visioning schools as open, flexible systems that are responsive to the specific needs of its current population and reflective of local talent within the organization requires that systems and structures be revised. Just as education moves away from the premise of the principal as a lone, heroic leader, the industry-standard idea

of static school leadership or formal leadership roles must also be reconsidered to create space for more flexible structures that allow for local talent to rise up to meet local need.

This research calls for a shift in thinking regarding establishing formal leadership roles in lieu of more flexible structures and calls into question how we define the role of instructional coach.

Typically a teacher on special assignment with no evaluative role, is this person perceived as formal leadership? At Grand Avenue, a school deeply entrenched in a history of hierarchy and command and control, it seemed important to position the instructional coach as a teacher peer, a trusted colleague whom ideas could be run past and who could help a teacher work through the challenges of implementing the initiative. The coaches were instructed to facilitate conversations and ask questions that pushed teachers' thinking. They served the staff as thought partners and resource collectors. Great efforts were taken so that coaches would have the opportunity to develop the strong personal relationships necessary for deep collaborative conversations to occur.

In the midst of these efforts, the coaches and I were receiving training on EL Education processes and were the primary providers of the professional development to the staff. The coaches did not provide direct services to students while the teachers did. The coaches frequently traveled for trainings and clearly held the lion's share of the knowledge about the initiative in the early days of implementation. While they did not have a formally assigned leadership role, these differences could have caused the staff to perceive the coaches as formal leaders. Interestingly, the SNA indicate that the coaches were participants that the staff was likely or highly likely to collaborate with and frequently or very frequently sought expertise from, sometimes more so than their job alike peers.

Notable in the sociograms yet not discussed in the findings is a red node representing the principal, the only formal leader at Grand Avenue, in this case, me. Similar to the coaches, the SNA reveals that I am a participant that staff members are likely or highly likely to collaborate with and frequently or very frequently sought expertise from. Although the SNA methodology is an emerging one, the prominence of the site principal in these networks is uncommon in the research so far.

The willingness of the staff to collaborate with and seek expertise from those recognized as formal leaders, those who are not and those whose positions may be argued either way may be best understood in how learning was approached in this organization. Made apparent by the topic of this research, I as the formal leader of this organization had a wondering about the importance of learning in concert with peers. The actions of the coaches and myself were guided by the pre-supposition that learning together had some sort of import on the work of school reform. As such, our actions came to model those beliefs. As the lead learners of the new initiative, we learned along side the teachers, making mistakes as they did, admitting that we did not have all the answers and learning from their experiences in as much as they learned from our training. This attitude toward collaborative learning helped to flatten the hierarchy in the organization and blur the lines between formal and informal leadership roles.

As the debate rages on regarding the best form of collaboration, structured or formal versus unstructured or informal, this research concludes the need for knowledgeable and skilled facilitators in both environments to effect deep pedagogical change. Opportunities for collaboration occur anytime and anywhere, in meetings and, as mentioned by Grand Avenue participants, one the way to the restroom, suggesting the need for every member of the

organization to be skilled at moving the product of collaboration from sharing ideas to shifting practice.

Perhaps the foundation of the previous two implications for practice, this research revealed an interesting and seemingly necessary component for collaboration to effect deep organizational change, the need for strong, personal relationships between the staff members. Previous researchers found that leadership happens in the space between individuals (Taylor et al., 2011; Woods, 2004) and that space must be capable of transmitting and receiving information that can reach deep, foundational beliefs about teaching and learning.

The time that a staff has together is precious and when Grand Avenue was engaged in the school-wide reform effort, every moment was devoted to learning the new strategies. The theoretical frameworks for this research demonstrate the importance of the relationship between the initiative and the practitioner and his or her peers. This research suggests that another valuable and necessary use of staff time and resources is the building of relationships, the development of personal connections, the provision of opportunities to develop trust within the organization.

The process of conducting research at Grand Avenue required a micro level analysis of the participants and their relationships with their peers. It also required looking at those relationships as they impacted the organization as a whole. My role as researcher forced me to look at the organization I was leading from a unique vantage point. From the perspective of researcher, the trajectory of change Grand Avenue was on became more apparent. The need to view the findings in that context relieved the anxiety and sense of responsibility many leaders have when their organizations come “under the microscope” of a research project. It also allowed

me to recognize and appreciate the change that was happening in the school in the characteristic way that change does.

Recommendations for Research

In this organization, personal relationships were identified as a necessary element for deep, meaningful collaboration that may lead to organizational change. The root of these relationships may lay in the concept of trust, a construct that was not explored in this research and just beginning to emerge as a theme in the larger body of research on organizational change.

It was interesting to note that the younger teachers mentioned instances of collaboration outside the organization while all other participants only mentioned those happening inside the organization. Was it their limited experience with collaboration that caused them to reach elsewhere for examples or could it be something about their age that expanded the range of their thinking or experiences? A study of this nature would be an important contribution as the workforce evolves and ages.

Appendix A: Social Network Analysis Questionnaire

Social Network Analysis

1. What is your name? (Pull down menu)
2. Would you like to voluntarily participate? (Yes or no)
3. Please indicate the degree to which you agree with the following statements: (Likert scale, 6 points, Strongly agree, disagree, somewhat disagree, somewhat agree, agree, strongly agree)
 - a. Staff at this school serve as a resource for one another.
 - b. This school experiments with new ways of thinking.
 - c. This school has a formal process for evaluating programs or practices.
 - d. This school rarely examines instructional practices.
 - e. This school frequently discusses the theory behind instructional practices.
 - f. This school values authentic professional development.
 - g. In this school, time is made available for education/training activities for school staff.
 - h. This school provides dedicated time and space for sharing information among staff.
4. How likely are you to collaborate with (listed) colleague about your instructional practice? (Likert scale, 4 points, Not very likely, somewhat likely, likely, very likely)
5. How likely are you to ask this person about innovative ideas for the classroom? (Likert scale, 4 points, Not very likely, somewhat likely, likely, very likely)
6. How frequently do you interact with colleagues whom you consider to be a reliable source of expertise related to your instructional practice? (Likert scale, 4 points, Once in the past 2 months, 1-2 times per month, every week or two, 1-2 times per week)

7. How frequently do you interact with colleagues whom you turn to for advice on how to strengthen your leadership practice?
8. How frequently do you interact with colleagues whom you turn to for advice about EL Education?
9. Who is most influential to your instructional decisions?
10. With whom do you feel you could talk candidly regarding your thoughts/ concerns about EL Education?
11. How many years have you been an educator (in any position)?
12. How many years have you been in your current position?
13. Gender
14. Highest degree
15. Race and Ethnicity

Appendix B: Journal and Personal Document Prompts

Journal Prompts

Describe an interaction that you consider to be valuable. Describe the experience. Who were you working with? When and where did this experience take place? Why do you consider it to be “valuable”? Did this interaction change the way you think about teaching and/or learning? If so, how?

Captioning or Explaining a Photograph or Artifact

Explain the artifact. Describe the interaction around the artifact that you consider to be valuable. Who were you working with? When and where did this experience take place? Why do you consider it to be “valuable”? Did this interaction change the way you think about teaching and/or learning? If so, how?

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