System Learning in an Urban School District: A Case Study of Intra-District Learning

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Forthcoming in Journal of Educational Change, 2017

Abstract

This paper presents evidence from a unique reform model that allowed teachers and other educators in a large urban district to collaborate with one another in the development of an innovation meant to improve student ownership and responsibility. In this longitudinal case study, we describe school stakeholders' learning about the design, the process of knowledge-transfer to school teams, and how school teams shared their ongoing learning with one another. School implementation teams were initially reluctant to share their learning with one another. By engaging in a shared innovation development process with structures for routine sharing, over time, implementation team members were increasingly interested in sharing their learning with one another. We discuss the implications for school improvement efforts.

Keywords: organizational learning; school improvement; teacher learning

The research reported here was supported by the Institute of Education Sciences, U.S. Department of Education, through Grant R305E100030. The opinions expressed are those of the authors and do not represent views of the Institute or the U.S. Department of Education.

Introduction

The school improvement literature has documented how, all too often, reforms may change a school's organizational structures but the instructional core remains untouched (Cohen, 1988; Cuban, 1993; 2013; Elmore, 1996). Organizational explanations for this lack of change highlight how teachers are insulated in their classroom with minimal opportunity to observe and learn from one another (Elmore et al., 1996; Lortie, 1975; Meyer & Rowan, 1977). When external programs do penetrate the classroom, teachers interpret and adapt new practices in a variety of ways, melding the reform with pre-existing practices, implementing less ambitious reform elements, or only changing materials or classroom structures (Coburn, 2003; Spillane, 2000), resulting in little alignment between the reform and teacher practice (Polikoff & Porter, 2014). Because of these challenges, scholars continue to emphasize the role of fostering teacher learning as a vital mechanism for creating deep change in teacher practice (Coburn, 2003; Elmore, 1996; McLaughlin & Mitra, 2001).

The recognition that successful school reform depends on teacher learning has led scholars to focus on individual and collective sensemaking of new reforms (Spillane, 2000; Coburn, 2001; Coburn & Stein, 2006; Stein & Coburn, 2008). This literature has described the micro-processes of how reform knowledge is gained by individual teachers (Cohen & Hill, 2000) and learning communities (Little, 2003; 2012; McLaughlin &Talbert, 2001). The focus on teachers within schools has left insufficient emphasis on the interorganizational processes by which teachers and other district stakeholders acquire and transfer knowledge and behaviors (Honig, 2006; McLaughlin, 2006). To some extent, the lack of research on interorganizational learning matches the reality in schools. Schools are likely to gain reform knowledge from the district central office (Gallucci, 2008; Honig, 2004; 2008), school improvement networks

(Glazer & Peurach, 2013), or self-generate it (Leithwood & Menzies, 1998), rarely sharing learning between one another.

In this paper, we focus on a school improvement process designed explicitly to foster cross-school learning among teachers and other school personnel. There are reasons to believe school-to-school collaboration could foster educational change in ways that previous reform efforts have failed. Unlike top-down reform models, schools can establish a small number of goals most relevant to their context, goals that they take greater ownership to achieve. Unlike individual school improvement efforts, cross-school collaboration allows schools to pool resources, overcome myopia and address shortcomings in their own expertise or skills, and develop mutual support (Chapman, 2008; Chapman & Muijs, 2014; Muijs, 2015). In addition, Fullan contends that these lateral connections deepen shared knowledge within a district that enables greater depth of implementation and greater commitment to the long-term success of the district (Fullan, 2007; Fullan Bertani, & Quinn, 2004). At their most constructive, previous studies have linked school-to-school collaboration with teachers' development of new classroom pedagogies, curricular units, diagnostic assessments, and the expansion of their instructional strategies (Chapman, 2008; Hargreaves and Shirley, 2012). That being said, Fullan (2004) cautions that the broad constituencies of such networks may overwhelm systematic focus on a shared vision to guide improvement work.

Several approaches to school-to-school collaboration have been adopted internationally. These approaches include from England's school federations (Chapman & Muijs, 2014), the Alberta Initiative for School Improvement (Hargreaves & Shirley, 2012), and Lesson Study, a process of teacher professional development that originated in Japan and has since spread throughout several Asian countries (Fernandez, 2002; Saito & Tsukui, 2012). Yet, this approach

to educational change remains uncommon in the United States. In this study, we examine an improvement process that brought teachers together from different departments within schools and different schools across the district to improve student ownership in the classroom. By focusing on the ways in which learning was shared between schools, we can better understand how sharing knowledge across schools helped develop a knowledge base of how to address shared problems of practice, particularly among problems not considered core instructional content. A second feature of this improvement process was the meaningful opportunities for organizational collaboration among school stakeholders and district central office staff. A team of teachers and school personnel from across the district sought to overcome the insular focus of much school improvement efforts by centering reform efforts on the development of common practices that could be implemented across schools in the district to address a shared problem of practice. With the design and development work being led by an intra-district team, this improvement work provides a unique case study of learning processes within a large urban district. This project organized a district team of teachers, administrators, and central office staff—the district design team—as the focal point of system learning. This team's goal was to respond to a research-based problem of practice from the partner district by developing, piloting, and implementing an innovation that could be scaled up throughout the district's secondary schools. These "innovations" included both changes to school structures (e.g. advisory period) as well as the adoption of new instructional practices meant to improve student outcomes through increases in student ownership and responsibility.

As a driver of district change, the design team was both a recipient and deliverer of reform knowledge. In partnership with program developers and researchers, team members used research on effective district practices to develop an innovation that could be piloted in three

"innovation" schools in the district. The design team was then tasked with transferring knowledge to the school implementation teams in these high schools as they piloted and further developed the design. We draw upon this process as a case study of how district stakeholders translated research into a locally developed reform across multiple schools in the district, sharing their learning in the process. To better understand the process of system learning, we ask the following research questions:

1. How did the district design team and school implementation teams learn about the design challenge? How did they translate their learning into a design for their schools?
2. How did the three school teams share learning with the district design team? How did this knowledge inform future iterations of the innovation?

Organizational Learning and Teacher Learning

Theories of organizational learning tend to describe how organizational learning arises inside pre-existing organizations. Within schools, overlapping experiences with school and out-of-school conditions create a shared identity, connectedness, trust, belonging, mutual dependence, and, over time, a shared communal history (Leithwood & Louis, 1998; Scribner et al., 1999). In the context of school improvement, organizational learning requires more than just attending to individual learning, but embedding learning in the routines and structures within the organization (Supovitz, 2006).

Structures to Enhance Teacher Learning

District, school, and classroom contexts play a considerable role in shaping teachers' responses to reform. Teachers' classroom experience shape how they view reform insomuch as new ideas or practices conform to their instructional norms and are deemed beneficial to their students (Spillane 2000). Implementation efforts require explicit focus on teacher learning to

help teachers understand what the reform is asking them to do and build their technical skills to effectively engage in the reform practices (Desimone, 2002). While some teacher learning happens through district-sponsored professional development (Desimone et al., 2002), other teacher knowledge-sharing is more informal, occurring through an informal sharing of tools, resources, and strategies (Borko, 2004). When sources of teacher learning are external to their school, a persistent concern is the potential for the lack of coherence of teacher practice and misalignment between instruction and district standards and assessments.

Within-school efforts to foster teacher learning through collective work have focused on professional learning communities (PLCs). PLCs are intended to enhance teacher learning by bridging organizational divides to give teachers enhanced opportunities to learn from one another (Louis & Marks, 1998; McLaughlin & Talbert, 2001). Reforms have focused on developing PLCs because enhanced collaboration, the development of shared norms and values, a focus on student learning, reflective dialogue, and deprivatization of practice have been linked to more enjoyable working conditions for teachers and increased student test performance (Louis & Marks, 1998; Saunders et al., 2009).

Greater collaboration among teachers at school may enhance learning among a teacher's most immediate colleagues (Moolenaar, 2012; Penuel et al., 2009). The social capital created through PLCs can ground organizational learning within schools and aid in coordinating coherent improvement efforts. On the other hand, the insularity of these communities may "perpetuate stereotypes, prejudice, and staid or destructive practices" (Printy 2008, p. 181), maintain the status quo (McLaughlin & Talbert, 2001; Smylie and Hart, 1999), or overlook instructional practice entirely (Murphy & Torre, 2014; Supovitz, 2002). Further, schools with underserved minority and low-income students may be unable to sustain learning communities as

a result of high proportions of inexperienced teachers, high teacher turnover, and a teaching staff without the instructional expertise to spearhead instructional improvement (Talbert, 2009). PLCs also offer no opportunity to share learning with other schools. The convergence of these factors results in problems unique to each school, yielding a proclivity towards site-based decision-making (Peurach et al., 2012).

District Organizational Learning

When districts engage in improvement efforts, communication about a reform tends to be vertical in nature, with reform knowledge disseminated from higher organization units (i.e. the district office) to school personnel, with few opportunities for horizontal cross-school learning, particularly for teachers (Supovitz, 2006). When teachers are involved in cross-school learning, it tends to exist within a district's existing organizational structure. Desimone and colleagues' (2002) study of teacher professional development describes "vertical" teacher involvement within the existing district hierarchy. Their work indicates that 65% of teachers work in districts where teachers participate in formal district committees. They find that teacher involvement in planning professional development is linked with higher quality professional development for teachers. An example of a more "horizontal" approach to teachers' cross-district learning is Supovitz's (2006) examination of how cross-school communities of learning were developed as a tool for spreading promising practices. Although these communities were advanced for teachers and principals, the cross-district learning that did occur was uncommon among teachers and only a few administrators reported that they used cross-school visitations. More positive experiences with cross-school learning can be found outside the United States, where it has been associated with positive outcomes in Canada (Fullan et al., 2004; Hargreaves & Shirley, 2012; Levin, 2008) and England (Chapman & Muijs, 2014l Muijs, 2015).

Even though horizontal teacher learning is not the norm in most school districts, this type of cross-school collaboration may be particularly beneficial for promoting organizational learning. In a longitudinal case study of the implementation of an ambitious mathematics curriculum in two urban districts, Stein and Coburn (2008) identify ways in which formal and informal cross-school networks inform teacher learning. They find that the teacher learning is not only related to the frequency of teacher-teacher interactions across a district but the nature of those connections. In both districts, mathematics teachers and coaches met routinely in cross-school teams.

Epistemic Communities and System Learning

To understand how school implementation team members learned about the reform and shared this learning across the district, we draw on the theory of *epistemic communities* (Duguid, 2005; Glazer & Peurach, 2015; Håkanson, 2010; Holzer, 1968), which is used to understand the development and transfer of knowledge across implementation team members spread across the district. Unlike communities of practice theory, whereby knowledge of practice arises within existing communities defined by geographic proximity, an epistemic community is grounded in an interpretive system that provides meaning to individuals (Håkanson, 2010; Holzer, 1968).

Epistemic communities can be characterized by the interplay of three elements: theory, codes, and tools (Glazer & Peurach, 2015; Håkanson, 2010). Theory is defined as the organizing schema that allows a group to develop any collective understanding about the nature of their practice. In this study, the district design team's theory was based on a design challenge, which provided a general framework for their improvement effort (described in greater detail in the next section). Codes are the symbolic means by which individuals communicate with one another. As teachers tend to rely on everyday work practices to learn about new reforms (Stein &

Coburn, 2008), codes are important to frame their experience in a way that can be communicated with others. In communities of practice theory (Lave & Wenger, 1991; Wenger, 1998), it is sufficient that these codes can exist among the immediate community members, as learning is defined by participation, that is, the mutual engagement in shared activities, the development of interpersonal relationships, and accumulation of a common skills. In contrast, in epistemic community theory, codes must be understood by all members of the network. As such, they interact with theory and tools for the system to develop and transfer new knowledge. The role of coding schema in developing shared knowledge is similar to the ways in which shared institutional logics shape how educators make sense of what a particular reform expects from educators (Woulfin, 2016). Further, the structure of district reform networks can shape how teachers interpret reform messages (Coburn, 2001).

Tools are the physical artifacts that "aid in the codification, storage, and transmission of articulated knowledge" (Glazer & Peurach, 2015, p. 184). In the context of network-based reform models such as the one discussed in this paper, tools are particularly important when improvement efforts begin to scale beyond the small group of initial innovators as organizations need to concretely define the signature practices that comprise a districtwide reform (Glazer & Peurach, 2015; Peurach, Lenhoff, & Glazer, 2016; Riordan, Klein, Jaffe-Walter, in press). Just as district structures shape the use of codes, districts can also establish tools or routines that shape educator behavior (IDENTIFYING REFERENCE; Honig & Venkateswaren, 2012). For example, district procedures around recruitment and hiring can shape how principals define teacher quality (Heneman & Milanowski, 2004; Rutledge et al., 2010). Further, the codification of knowledge into a tool allows for the generation of new knowledge— systems learning— garnered from using the tools in practice.

Organizational Learning and the Student Ownership and Responsibility Innovation

The focus for improvement efforts emerged from research in two higher and two lower performing high schools in the district. Evidence from these case studies suggested that what differentiated the higher performing schools from the lower performing schools was the presence of coherent school practices that compelled students to take greater ownership and responsibility for their own learning (IDENTIFYING REFERENCE). More specifically, this research identified the need to create a set of norms that foster a culture of learning and engagement among students and establish instructional and organizational supports to help students meet high expectations.

The findings from these case studies, along with the broader literature on practices that support building non-cognitive skills in students to improve efficacy and engagement (Bandura, 1997; Farrington et al., 2012; Fredericks, Blumenfeld, & Paris, 2004) defined the "design challenge" that served to organize subsequent improvement efforts in the district. In the following school year, a district design team was established and tasked with taking the design challenge and designing an innovation that could be implemented in three high schools across the district. These *innovation schools*, as they were called, were identified by district central office staff members as three lower performing high schools that they believed had the organizational capacity to improve through participation in this improvement process. The principal at each innovation school then identified two teachers to serve on a district design team. In other work, we describe how the successful adoption and scale up of this improvement model was related to principals' and district leaders' merging of rational and organic management styles. As we focus on participants' learning related to this school improvement process in this

paper, we do not discuss the role of principals or district leaders, except in cases they were immediately involved with the work.

This team also included “at-large” members, consisting of administrators from other high schools in the district and central office staff, external program developers who served as facilitators, and university researchers who had conducted the initial research. In total, there were fifteen district members on the design team, three program developers, and three researchers. A district coordinator served as a communication bridge between the developers, researchers, and the district. The team met monthly, where they engaged in highly collaborative design work. While it was understood that the innovation would first be implemented in the three innovation schools first, the design process aimed to create an innovation that may eventually be scaled to other schools.

During monthly meetings, design team members learned about practices that could improve student responsibility from program developers and researchers, conducted a needs assessment to identify specific student needs they sought to improve, and then designed an initial Student Ownership and Innovation (SOAR) innovation that could be implemented in high schools throughout the district (IDENTIFYING REFERENCE). Notably, the needs assessments confirmed many of the research findings, brought about greater commitment to the shared problem orientation of student ownership and responsibility, and helped the district design team focus on more specific student behaviors they hoped to improve. The district design team narrowed the focus of the SOAR innovation to practices that fostered growth mindset, developed student problem solving skills, and improved student engagement.

The district design team shared their preliminary innovation with the newly formed school implementation teams at the beginning of the 2013-2014 school year. Members of the

district design team from these schools took on leadership roles on their school implementation teams. They were joined by five to seven teachers selected by each school's principal and/or recruited by the team leaders. Throughout this development phase, the school implementation teams met quarterly with members of the district design to engage in further training and discuss their ongoing learning. To support development and implementation, the team adopted a continuous improvement process where innovation school members engaged in small-scale cycles of piloting, looked for evidence of the success of the design, and made refinements based on their learning. Elsewhere, we have described how the norms of data use were shaped by the district's accountability culture (IDENTIFYING REFERENCE). Teams drew on perceptual evidence such as teacher and student feedback or classroom observations to inform their improvement efforts but reverted to outcome evidence when determining the success of success of practices in terms of improving student ownership, in efforts to situate their work within the district's existing accountability system.

By the end of this development year, the core practices of the innovation included teaching students about growth mindset, student grade monitoring activities, problem solving activities that supported students in improving their grades, and a behavioral reflection form. These practices intended to increase student ownership and responsibility in two ways. Learning about growth mindset was designed to improve students' beliefs that they could succeed in challenging academic content, thus giving them the mindset to want to engage. Activities such as grade monitoring or the behavioral reflection form were seen as tools for students to self-monitor their academic progress and behavior, thus giving them concrete skills to take greater responsibility over their own learning. It should be noted that schools had the flexibility to customize each of the practices to fit their school context. The primary ways in which the SOAR

innovation differed across school sites was in regards to the frequency with which a practice was implemented, the length of time that was set aside for the practice, and the ways in which school members sought to integrate the practice into routine school processes outside of its formal implementation.

Methods

District Context

The data used in this paper were collected as part of a larger study in a large, urban district in the southwestern United States to explore new approaches of scaling effective practices. The district's recent history of high school reform prior to this work includes the alignment of locally developed curriculum with academic standards and common assessments across schools and the creation of thematic foci for each high school and student choice in selecting schools based on chosen program. At the time of the study, the district served approximately 20,000 high school students, the majority of whom were low-income or from traditionally underserved racial or ethnic groups. The demographic characteristics of these schools are listed in Table 1. Pseudonymous school names and generalized values are used to protect school confidentiality.

Data Collection

The research team collected numerous forms of data including observational field notes and audio recordings of all design team meetings, artifacts distributed or produced at the meetings, and feedback forms completed by members after each meeting. Research team members collected these data by attending monthly meetings with the design team and program developers, where they were both participants and observers. Six two-day meetings occurred during each of the design, development, and implementation phases, covering a 28-month span.

In total, researchers gathered 171 hours of audio files, 63 field note logs, 509 artifacts, and 294 feedback forms. The research team also conducted in-depth, semi-structured interviews with participants. Design team members and a subset of members from the school implementation team were interviewed every summer. In total, 67 interviews were conducted across the three phases of the work. Table 2 contains detailed information about the frequency with which these data were collected.

Data Analysis

In this paper, we examine the interplay of learning among district design team members and how their learning is shared with the school members who implement their design. A qualitative case study design (Lincoln & Guba, 1985) allows us to probe the extent to which the process of local design and development of an innovation facilitated alignment across three high schools in the partner district. The two research questions were analyzed through products developed from the larger project data. Data analysis for the larger study proceeded in multiple stages. The project's framework for innovation design and development consisted of several *a priori* codes in addition to codes, which emerged inductively from the data. These codes attend to the delivery of learning and participants' understanding of (1) the SOAR design, (2) the design process, and (3) implementation and scale. The framework also includes codes about participant attitudes and engagement and the extent to which the design process was collaborative, needs-centered, aligned to existing district components, and was grounded in the SOAR design.

Audio data from each session were not transcribed, due to the length and relative complexity of each session recording. Instead, graduate students listened to each recording in its entirety, and utilized reflection forms to partially transcribe and synthesize data according to the analytic framework described above. These reflection forms were also coded. After the data were

coded, the research team wrote detailed memos that described the evidence under each code by meeting. The goal of these "session memos" was to write a thick description about what happened in that day's session under each analytic code. Then, a single summary memo was prepared that summarizes the evidence under each analytic code across the sessions. The coding process produced emergent trends in the data leading to the aforementioned three research questions.

This paper draws on these summary memos and utilizes constant-comparison (Glaser & Strauss, 1965) and domain analysis (Spradley, 1979) to investigate the research questions. Given the relative complexity of this project, the research team consistently sought to develop and maintain the credibility of our findings. Credibility was addressed through inter-rater agreement, triangulation, peer debriefing and member checking.

Results

Learning about the Innovation

Our first research question seeks to understand how district design team members learned about the SOAR design challenge and how they translated their learning into an implementable innovation. Two features characterized the initial design process: (1) the development of a shared problem orientation (i.e. theory), albeit with challenges, and (2) the gradual establishment of codes to communicate their work across the district community. Yet, without a school context in which to enact design elements, the design team had limited means to develop tools related to the enactment of SOAR, resulting in an under-specified innovation.

When participants began this process, design team members were brought together to create an innovation to improve student ownership for the "average" student in the district. This generality made it difficult for design team members to learn about the design challenge or the

core elements of the design. Kristine, an at-large member on the district design, reflected in an interview: “The challenges, at the beginning, just not knowing exactly what. We kept saying, well, what is it we're doing? What is the what?” Despite this initial frustration, over time, team members developed a shared problem orientation that informed ongoing discussions of the design of the SOAR innovation.

Yet, this problem orientation was insufficient to communicate their learning between stakeholders who were based in different schools throughout the district. As discussions of the SOAR innovation remained theoretical in the early stages of the design process, district design team members did not have the means to codify their learning. They additionally struggled to imagine how the innovation design would be imbedded in their schools, particularly when the school contexts differed among the innovation schools. In a late session in the design process, Rebecca, a teacher-leader at Forest Glen remarked, “It’s really difficult for me to separate the innovation from implementation… I feel like it’s such an abstract concept, without discussing implementation as well what the concept really is.” Andrew, a district leader involved in the design work, bemoaned the fact that the design was “so broad and big that you’re just going to have conversations in the class or people frustrated.” Although he and others on the district design team pushed for a more specific design tools, that is, artifacts to be used in practice, they were unable to achieve this goal with the focus on the district’s “average” student.

Continued discussion of the SOAR innovation gradually resulted in not only a shared problem orientation among district design team members but also the symbolic means to communicate their work across the different campuses. Colin at Desert Grove said,

> What I really appreciate about this process, and I think one of the, for lack of a better terminology, the selling point of this is the fact that I really throughout this process felt like we have for the first time in the district really addressed a family problem as a family

> not as individuals… we really have sat down and the table and said, "Ok, we've got this problem. How are we going to solve it?"

Throughout the design process, continued discussions about the design challenge and core elements of the SOAR innovation combined with reflections of what the design could look like in practice resulted in an epistemic community that possessed theories and codes, but lacked tools that could be shared with the innovation schools. The development of tools required the integration of school-based implementation team members into the design process. As we discuss in the next section, when the development work shifted to the school-level, piloting the innovation gave school implementation teams the opportunity to develop specific practices that would help to accomplish the goals of the innovation.

Translating the Innovation into Practice

Integrating school implementation team members into the development process brought the opportunity to achieve greater specificity of the design, as they could use knowledge about their school context to clarify how the SOAR innovation would look in practice, developing specific tools for their work. This work first required learning about the theory and codes, that were developed by the district design team. The lack of tools from the district design team, however, meant that the tools developed by the separate schools were heavily based in school-specific routines, rather than shared tools of the network.

The first formal opportunity for the school teams to learn about SOAR occurred during a two-day meeting at the beginning of the 2013-2014 school year (the meetings continued on a monthly basis throughout the year). Through presentations by program developers, research team members, and district design team members, new participants were taught about the general problem orientation meant to focus their work. This included reference to the core elements that defined the design challenge as well as details about the emergent practices of the SOAR

innovation. When framing their work, Ken from Valley High School referenced the core elements as the "guiding piece" of "what needs to be going on within a school to enable student ownership and responsibility." At its most concrete, teams were given information on strategies on how to build growth mindset. A researcher, Renee, reviewed "8 Strategies to Build Growth Mindset." These strategies include "Create a culture of growth mindsets", "Encourage and praise effort", "Teach students about the importance of exercising their brain muscles" and "Teach improvement strategies." Presentations on the nature of the design or practices that were supposed to be enacted overlooked questions of how these practices would actually look in the innovation schools, as no tools were developed by the design team.

Piloting elements of the SOAR design allowed school implementation teams to develop their own meaning around the design and bring organization-specific knowledge that could help achieve its goals. This process of piloting the innovation was iterative, with successive experiences within each school team deepening their understanding of successful practices that support the design. Kristine summarized how they were "narrowing things down and then revamping and looking at the data some more, and it was just all part of the process to come up with the best opportunity or the best prototype that would be beneficial to the students and the major needs of an inner city school." Matthew emphasized how piloting made the work more meaningful for each campus:

> What I really feel that went well is when they allowed us to be able to — I think we broke off sometime in last summer, and the— they decided that we would be able to — that what we needed to do at our own schools, having — even though we were doing SOAR, everyone was doing SOAR, we were able to take it and modify it to fit each of our campus's needs, and at that point that's when I feel that we finally started making headway towards the right direction, and so, you know, going through that process is what went well, as far as — as far as this whole process has been concerned. I mean, I understand taking the time to get into, you know, what exactly what we're going to do, but once we made that decision, it helped that we were able to go and mold it towards what our campus needed."

With development work shifting to the three innovation schools, the improvement process became more imbedded within existing school routines. Involvement of school stakeholders allowed for more organization-specific knowledge to bear on the problem of student ownership and responsibility. By situating the development process in everyday practices, they were able to create tools, thereby institutionalizing SOAR in a way that was not possible for the district design team. The SOAR innovation moved beyond abstraction, with a coherent set of instructional routines and procedures developed at each school that supported the goals of the SOAR innovation.

School implementation team members were inclined to exploit pre-existing school practices when designing SOAR, sometimes at odds with the goal of aligning the innovation to the shared district design. Jillian, an implementation team member at Desert Grove summarized this process: “I think what went well is the—is looking at what we have and trying to figure out how we were going to incorporate it with what we already do, what is it that teachers already do.” One example of how school teams exploited existing school practices to shape their innovation came at Desert Grove. The school had a pre-existing literacy initiative that encouraged reading across all subject areas. Rather than create a separate SOAR advisory period, as was the case at Forest Glen, they decided to assign articles on growth mindset and problem solving during time already set aside for literacy. The school team reified this element of the design by appropriating a practice already in place at their school.

Developing an innovation at the school level offered implementation team members the opportunity to situate their emergent design within the organizational routines and constraints of their school. This experience stood in contrast to the district design team that lacked tools and was devoid of the practical means of reifying the initial SOAR innovation. Implementation team

members needed a context to practice and institutionalize what they were learning. At best, the school development process provided teams with a structured means to learn about the innovation during its initial implementation in their schools. Yet, with an innovation development process occurring at three separate schools, differing organizational priorities resulted in localized tools that were not always compatible with what was developed at other schools. As we discuss in the next section, learning across schools was also compromised by school team members' proclivity towards addressing the needs of their school. Only when teams prepared for, and led school-wide implementation did they express an interest in learning from one another.

Initial Reluctance Towards Intra-District Learning

Our second research question pertains to the sharing of learning across school teams. During the school-based development process, school teams continued to meet at regular district-wide meetings. These meetings provided teams with formal and informal opportunities to share their learning across schools.

The general sentiment during the early development process was that participation on the cross-school team was unhelpful. Doug from Forest Glen said, "The only benefit I found from mixing the three schools was the sharing of information, but really there was not that much sharing of information." Some implementation team members even found opportunities for sharing at these meetings to be detrimental. Jillian said of the cross-school collaboration:

> Another challenge from last year was just working with — at the point when we had to work with every school, you know, there was — some of [Valley]'s on our team, or vice versa, or any — you know, as we collaborated together, it was just frustrating, because we were all on — not all on different points, but there was some — there were some discrepancies on, you know, what exactly what was — what was — moved forward on these, and so that was very frustrating, the fact that we really wanted to take what we needed and go our way. Still, being able to give input to everyone else — because I think

> that's important — but it was frustrating when we had to work together all three schools on something.

Overall, there was a reluctance to work in cross-school teams and participants felt their time at meetings would be better spent on issues pertaining to their own school.

Implementation team members linked this reluctance to share across schools to the lack of alignment of the SOAR design across the innovation schools and pressures to develop a cohesive design for their school. In other words, there was little incentive to translate the tools they had developed at their school into a common district design, as the newfound knowledge of practice was more easily transferred among school members. The development of practices pertaining to growth mindsets offers one example of how different delivery mechanisms left teams with little they could learn from one another. Desert Grove dedicated the entire second day of school to teaching students about growth mindsets, with mini-lessons that integrated their existing literacy initiative with growth mindset in each course about the concept. For their implementation team, they felt that teachers in their school would most likely resist implementation if it involved intrusions on class time once the year was underway, and they wanted to align SOAR with their existing initiative. Given the strong focus on departments at Valley, they decided to co-construct a lesson on growth mindset with each department's professional learning community that would be delivered during extended homeroom periods. At Forest Glen, in collaboration with the school's administration, the implementation team organized weekly advisory periods, with a curriculum that included lessons on growth mindset, among other topics.

With school implementation teams exploiting pre-existing school resources to develop SOAR, they did not see much value in learning from other teams in cross-school meetings. Instead, they felt significant pressure to ensure their innovation melded with their school

organizational culture in a way that teachers and other school staff would be more likely to buy into the practices. Riley at Valley summarized this feeling: “Every teacher on the committee believes in this, but what we wanted to do, we want to make it what’s best for our school, more than what’s best for the other school or what they’re having us do, we want to make it fit to our kids and our school.” This attention to their school’s organizational demands meant that school teams initially put more effort into merging the design with pre-existing programs rather than aligning the innovation to the shared district design. Overall, the pressure for teachers to develop a reform that would be adopted by the staff to benefit the students at their home school eclipsed other priorities, such as the role of sharing learning with other school teams. Even with an ongoing emphasis of the school teams’ involvement in a district process, members on the implementation teams understood their role as developing a design that could be successfully implemented in their school. As a result, participation in the cross-school team was secondary.

Increased Openness Towards Intra-District Learning

School development teams were more receptive to learning from other schools as they prepared for and engaged in school-wide implementation beginning in the spring of 2013-2014. First, the focus of meetings fostered this intra-district learning. By the spring of the 2013-2014 school year, teams were given more time to plan with their school group, alongside more structured sharing procedures. This structure also included the continued use of the continuous improvement process, which linked piloting and outcomes. The norms of sharing also shifted. Teams initially presented what practices they had piloted, offering little reflection on the outcomes of the practice. When piloting and testing SOAR practices, members began not only reporting on what they had implemented but evidence of their challenges and successes. This

increased openness is reflected in comments made by implementation team members during the sessions and in interviews. Matthew noted this shift:

> People were talking about things that were actually happening and could actually be done on campuses. There was a lot more being done and tried on different campuses, and I think we could have — we used every minute we could to hear what other people were doing, oh, what are you doing? You guys tried this? Oh that looks really cool. We could use that this way. And a lot of cross-pollination of ideas, but those ideas had to be being tested and being tried first, and that made those meetings exciting, because you never know what another group is actually doing.

Following an activity where groups shared out in a meeting, Sandra commented that she enjoyed the activity as it allowed her to listen to the other schools' ideas and they may be able to be used at her school. She said, "I think this is a good process for discovering ideas. Through group work, and collaboration, like this… I think we should continue doing this in the future because we gain a lot of ideas from other schools on problem solving or other things." Unlike the previous phase of the work, where teams had codified their designs in ways that differed from one another, teams now drew on the theories underlying the SOAR innovation, revitalized codes that shaped their communication, to transfer their learning across school sites. In other words, this sharing process helped to codify practical knowledge in formal routines that could more easily be shared across sites.

This new openness was most evident with the Desert Grove's sharing about their piloting of the "Think It Out" behavioral reflection form. This form was adopted as a tool for students to self-correct their behavior and avoid a formal disciplinary write-up by planning how they would change their behavior. After presenting their experiences in developing the form, the school implementation team at Desert Grove described how they had evaluated its uptake and utility as part of the continuous improvement process. The school implementation team collected feedback from a sample of students, both with and without disciplinary infractions. Their main finding was

that even students who were not getting in trouble preferred for their classmates to remain in class after the using the timeout for rather than immediately being sent to the front office. Students who had received infractions from the school felt similarly. Their description of this practice during one of the sessions in the spring elicited much interest from the other schools. In discussing the practice, they clarified how not all teachers had adopted the form but that it helped create a common language for students and teachers to talk about discipline. By the beginning of the next school year, the other two teams had also adopted this practice. Allison summarizes how this type sharing became more helpful:

> I like a lot of the discussions that we've had at our SIDT meetings, helpful to see what other schools are doing, kind of steal ideas from them and then tweak them to fit our own campus needs. So I think the collaboration has been really good, and also just having outside sources kind of come in and we're kind of partial to everything and they're not exactly sure maybe what our constraints are, but helping us work through those also.

This new approach to sharing their learning set the stage for much more frequent cross-school exchanges once whole-school implementation began.

During whole-school implementation, beginning in the 2014-2015 school year, sharing was more likely to be informed by data gathered by the school implementation teams. Teachers at Desert Grove and Valley implemented a grade reflection and goal-setting form with their homeroom students, with the goal to increase the number of students on the schools' honor roll. Through surveying students and teachers, the implementation team at Desert Grove learned that the activity had increased students' awareness of their current grades, as well as their goals for what grade they hoped to earn during the current grading cycle. They found great variation in the action plans students developed to reach these goals and need to customize the questions for ability and grade level. They also learned that they needed to better train their teachers, offer more support for teachers in large classes, and extend the homeroom period to give teachers in

these large classes the opportunity to talk to their students about their goals. At Valley, the school implementation team looked at exit surveys with students and found students similarly had difficulty in conceptualizing the action steps to reach their grade goals. In addition to looking at this perceptual data, the team also looked at student passing rates. While they report finding no change in students' overall grades in the grading cycle following this activity, they observed more students reaching honor roll. When school implementation teams committed to a shared practice—such as the grade reflection process at Desert Grove—they often implemented it parallel to one another, without the practice in one school explicitly informing the practice in another school. Nevertheless, through sharing their learning about these promising practices, schools coalesced on a common set of practices, including the grade reflection form and teaching students about growth mindsets and problem-solving that achieved greater alignment. When these common tools were combined with prior knowledge of the SOAR innovation and norms of communication, team members were able to successfully share their learning across school boundaries for the first time.

When teams shared, they also focused on strategies and challenges related to implementation. Comments made by implementation team members and the facilitators reflect this shift. In an interview, Kevin, an implementation team member at Desert Grove remarked, "The group of people that is represented in the room is a group of people that it seems like everyone is willing to get their hands dirty and work, and we're all willing to be engaged during the time that we've got together. It definitely does not feel like the kind of checked out professional development experiences that occasionally happen, things driven by a school district." During a discussion of the teams' progress in the spring, Felix reflects, "What's unique about this project is that you're going to share warts and all. You're not going to share your

beautiful plan and how it went beautifully. That's fantasy island. You're going to talk about the challenges." Their newfound capacity to transfer knowledge across schools created the conditions for team members' collective reflection and continued learning (Glazer & Peurach, 2015).

This sharing most often consisted of strategies of how best to share the design with their colleagues, either informally or through professional development. For instance, the team at Valley held professional development to teach their staff about growth and fixed mindsets. They described to the team how they pulled quotes from a growth mindset book, showed a video on neuroplasticity, and used a handout of examples of appropriate praise language that targeted growth mindset and not innate ability. After the presentation at the district meeting, Jillian asked the Valley development team: "Looking back, would you have preferred to have done the PD as a whole group or small groups?" Riley answered that "Small groups would have been best. Teachers would have time to practice, speak up and ask questions." Such interrogation of the other school's may help explain Valley's use of professional learning communities as a means to transmit the design in the 2014-2015 school year.

To summarize, we initially found great reluctance to dedicate time in district meetings for teams to share their learning across schools. School implementation teams initially believed this type of sharing was unhelpful and took time away from much-needed school-based planning. In addition, school implementation team members saw little overlap over what was being developed across schools. Even if they shared a theoretical basis for their work, the tools that were developed were distinct, leaving team members unable to efficiently share their learning across school boundaries. Yet, as teams prepared for and led schoolwide implementation, they expressed greater interest in learning from the other schools, both in terms of what they were

implementing and evidence of the associated successes and challenges. At this point in this reform process, we observed that school teams coalesced on a more common set of tools, tools that informed participation on the district design team. The interplay of a common theoretical basis of the SOAR design, symbolic means to communicate with one another, and shared tools enabled the participation in this iterative school improvement process, where collective reflection and learning were able to transpire.

Discussion/Conclusion

Improving teacher learning, similar to broader educational change efforts, is a nested endeavor. Teacher learning is situated within the schools and districts to the extent to which teachers participate in formal and informal structures aimed at improving instructional or organizational practices. These professional interactions tend to either be isolated within a teacher's school or, when cross-school collaboration does occur, it is limited to teachers of the same subject or grade. In this paper, we have described a unique reform model that fostered teacher learning across high schools in an urban district as they developed practices that could be implemented to improve students' co-cognitive traits such as student ownership and responsibility.

This improvement process required intentional opportunities for cross-school collaboration, as the district design team included stakeholders from across the district that had no other opportunity to routinely meet with one another. Educators' engagement over the three years of this study created a shared history of reform knowledge that informed the development and ongoing implementation of the SOAR innovation. At the same time, opportunities for teachers to ground their learning within their schools and classrooms proved vital for school implementation teams to be able to learn from one another during district-wide meetings. This

finding highlights how districts' nested structure can become an important way in which districts come to gain knowledge about local improvement efforts. What implementation team members learned in their classrooms was turned into tools at the school level. When these tools were aligned with the shared theoretical orientation of the SOAR innovation, the district team could then learn across school sites. In contrast to a model of teacher learning where teachers seek out subject-specific knowledge through both formal and informal channels, school-level innovations were vital in developing reform knowledge that could be spread throughout the district.

Participation on the district design team highlighted a tension between the need for a local school context to practice elements of a design and the importance of a site for intra-district learning so teacher learning is not confined to one school. With development of SOAR taking place at the school level, there was an ongoing risk that what was developed would not be relevant for other schools. Establishing a shared problem orientation at the beginning of the development process and codes by which team members would communicate on the district design team provided a means by which some degree of alignment was achieved across schools. This alignment was important in terms of collective learning and the sustainability of the reform. Only when school implementation teams were implementing similar programs and practices over time were they able to learn from one another, a finding consistent with Glazer and Peurach's (2015, 2016) discussion of Success For All and Reading Recovery. Supovitz (2006) argues that this sustained program implementation is a key source of organizational learning within districts. As networked approaches to school improvement are adopted across additional sites both in the United States (Hannan et al., 2015; Martin & Gobstein, 2015) and internationally (Chapman, 2008; Chapman & Muijs, 2014; Fullan et al., 2004; Hargreaves & Shirley, 2012), understanding

their application is vital to better understand the extent to which they may improve teacher or school practices.

Evidence of interorganizational learning in the context of this iterative design and development process has policy implications for district and school-level administrators when implementing new reforms in their districts and schools. First, in regards to the broader context of educational change, developing teacher and administrator buy-in by involving teachers and district staff in the co-development of a reform created meaningful opportunities in which to participate in the innovation's design, development, and implementation (IDENTIFYING REFERENCE). These opportunities were made meaningful through their link with tangible improvements in their schools. This active participation in development of the innovation design helped to avoid a compliance-based reform model prevalent with many district-based school reform (Stein & Coburn, 2008). Creating meaningful participation at all phases in this reform process was a key mechanism for fostering organizational learning.

Second, at the outset of the reform effort, reform leaders (e.g., district administrators, school administrators) needed to develop formal processes and structures for sharing information between schools. The importance of formal structures for sharing learning cannot be understated, and reflects prior research on how collaborative structures shape teacher learning (Atteberry & Bryk, 2010; Baker-Doyle & Yoon, 2010; IDENTIFYING REFERENCE; Penuel et al., 2010). These organizational supports included the opportunity for school teams to meet, but also the establishment of codes to guide the process of sharing across schools. As participation on the district design team was disconnected from their everyday practice within their schools, the development of means by which to discuss the ongoing implementation of SOAR were vital. In many ways, this process inverted the traditional sensemaking literature that indicates that school-

level understandings of reform are influenced by district framing of the reform (Datnow & Park, 2009; Supovitz, 2008; Woulfin, Donaldson, & Gonzales, 2016). With this type of networked improvement approach, what school-based members shared at district network meetings was filtered through their school's interpretation of what they learned. Having explicit formal processes for sharing information across schools that were in place at the outset of the reform efforts provided a structured for exchange of ideas among schools, administrators, and teachers. Yet, it was only when the tools developed across school sites became more similar that the exchange of ideas produced learning across the system.

In addition, district and school administrators should be aware of two additional features of this improvement model that were important in fostering and maintaining a shared focus among participants. First, the design process established a shared problem orientation grounded in the theoretical understanding of the SOAR innovation, which guided the work. Although this problem-specific focus did not offer requirements for what needed to be implemented across sites, it helped to define the broad categories of practices that were to be common across schools. Even if the practices themselves differed across schools based on their organizational context, the shared problem orientation defined the categories of practices they may adopt and the student outcomes they aimed to change. It also created a common focus across schools, which eventually led to more meaningful opportunities for schools to learn from one another when they met. Ultimately, this is important for scaling up educational innovations as shared understanding around the problem and core ideas of the innovation helps to build a learning community around the innovation (Elmore, 2016). Second, even when allowing for customization of the design at the school-level, this reform process consistently upheld the importance of a system orientation. When school teams embraced this dual focus on the needs of their school and the district at large,

they were able to align their work with the shared vision of the SOAR innovation. Participation in the piloting and testing process was required for reification of the design, while ongoing participation on the design team enabled school implementation teams to align their design with larger goals than they could achieve solely at their school. Consistent with epistemic community theory, we found that it was the interplay of theoretical understanding, codes that shaped communication between team members, and the tools that were created that enabled shared reflection and system learning.

Finally, in the broader context of educational change, this paper highlights the importance of networked learning opportunities to spread innovations beyond the initial schools in which they were developed. Increasingly, efforts to scale educational innovations focus on building networks or partnerships that serve as learning communities, not only within schools, but across schools, the district central office, and external stakeholders (Identifying reference, 2017; Elmore, 2016; Fishman et al., 2013; Fullan, 2016; Fullan et al., 2004). Networked improvement communities have been adopted in the United States as one approach to establish processes for school districts to engage in systems learning by sharing evidence of successful practices across classrooms and schools (Bryk et al., 2015). This networking approach builds off previously successful improvement efforts in Canada (Fullan et al., 2004; Hargreaves & Shirley, 2012; Levin, 2008) and England (Chapman & Muijs, 2014l Muijs, 2015). These approaches to school improvement emphasize that teacher professional learning cannot be isolated within schools. Opportunities for cross-school learning, such as those described in this paper, have the potential to enhance professional learning and address longstanding challenges in terms of altering teachers' practices. In the context of the Every Student Succeeds Act, where districts are tasked with implementing evidence-based practices, this networked approach to improvement may help

build a local evidence base of instructional practices when no such evidence exists in external resources such as the What Works Clearinghouse. Further, scaling up educational change requires altering not only individual practices, but larger organizational structures and processes to better support the practices the innovation is trying to change (Bradach, 2003; Penuel, Fishman, Cheng, & Sabelli, 2011). As a case study of intra-district learning, the findings outlined above focus on the importance of creating the improvement infrastructure that will the organizational learning and change for system improvement (Hopkins & Woulfin, 2015; Peurach, 2016).

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Table 1. Demographic Profile of District and Partner High Schools

	District high schools	Desert Grove High School	Forest Glen High School	Valley High School
Student enrollment	20,504	>1500	700-1200	>1500
Student race/ethnicity				
Percent Hispanic	59%	40-60%	>80%	>80%
Percent African American	25%	20-40%	<20%	<20%
Percent White	8%	20-40%	<20%	<20%
Percent economically disadvantaged	70%	40-60%	>80%	>80%
Percent LEP	6%	<5%	>5%	>5%
Teacher race/ethnicity				
Percent Hispanic	17%	<20%	20-40%	20-40%
Percent African American	29%	<20%	<20%	<20%
Yrs. teaching experience	10.9	10-12	10-12	8-10

Source. District administrative data, 2012-2013 school year.

Table 2. Data Sources

Data Sources	Phase 1 – Design	Phase 2 - Development	Phase 3 - Implementation	Total
Data collection dates	(February 2013 – August 2013)	(August 2013 – June 2014)	August 2014- June 2015	28 months
Audio Files	62 h 22 m	66 h 21 m	42 h 20 m	171 h 3 m
Field Note Logs	28	24	11	63
Distributed Artifacts	147	236	126	509
Research Reflection Forms	6	5	4	15
Participant Feedback Forms	97	141	56	294
Interview Transcripts	24	23	20	67