Partnering for Improvement: Improvement Communities and Their Role in Scale Up

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**Introduction**

The past several decades have seen a substantial amount of time, resources, and expertise focused on producing sustainable improvement in schools at scale. Research on these efforts have highlighted how complex this challenge is, as it needs to attend to building teacher support and participation, aligning with the organizational context, and building capacity among stakeholders across organizational levels (Berends, Bodilly, & Kirby, 2002; Glennan, Bodilly, Galegher, & Kerr, 2004). Despite this substantial research base on implementation and scale, new reform efforts often repeat the same challenges (Payne, 2008), leading to calls for a fundamentally different approach to educational improvement. To date, most improvement efforts have focused on identifying "what works" and then disseminating "what works" to school systems, while attention has focused on how organizational and social contexts shape how, and for whom, reforms work (Bryk, Gomez, Grunow, & Hallinan, 2011; Means & Penuel, 2005). Re-focusing on educational improvement at scale, rather than program implementation at scale, means recognizing that improvement comes not from just faithfully executing a highly developed program, but integrating new practices with existing systems and building collective knowledge about how practices lead to educational outcomes (Elmore, 2016; Lewis, 2015).

With this re-focusing on improvement at scale, partnerships offer a way to facilitate the integration of new practices with existing systems and building collective knowledge (Coburn, Penuel, & Geil, 2013). Whether the approach calls for improvement science, design-based implementation research, or place-based research alliances, there are calls for long-term partnerships where researchers and practitioners focus on jointly solving persistent educational problems within a specific context (Bryk, Gomez, Grunow, & LeMahieu, 2015; Coburn et al., 2013; Fishman, Penuel, Allen, Cheng, & Sabelli, 2013). These partnership models move beyond

the assumption that research needs to be simply translated into accessible language for practitioners, but that effectively using research in practice requires extensive interaction and mutual learning (Teeters, 2015). Whereas traditional research on educational interventions assumes that the knowledge is "in" the intervention itself, new partnership-based approaches to research assume that the knowledge is "in" the people and systems that use the program and the goal of research is to understand the "conditions and contexts that enable program success" (Cohen-Vogel et al., 2015, p. 261; Lewis, 2015). In other words, research-practice partnerships are important because enacting reform requires substantial local expertise and a dynamic approach to sustaining and continually adapting the program to fit the evolving local context (Chambers, Glasgow, & Stange, 2013). At the same time, researchers need to engage with practitioners to help interpret research knowledge into local understanding to transform practice in ways consistent with rigorous evidence on effective practices (Sabelli & Harris, 2015).

Research-practice partnerships (RPPs) are defined as "long-term, mutualistic collaborations between practitioners and researchers that are intentionally organized to investigate problems of practice and solutions for improving district outcomes" (Coburn et al., 2013, p. 2). RPPs engage in joint work, where both practitioners and researchers bring their expertise to the focal problem of practice and collectively build knowledge about educational improvement around that problem (Teeters, 2015). These collaborations are distinct from traditional ways in which researchers engage with school systems as they are aligned with the district's strategic plan, involve stakeholders in delineating the work from the beginning, and establish ongoing mechanisms for sharing learning among partners (Munoz & Rodosky, 2015).

Doing this work well requires an understanding of the challenges and opportunities that partnerships afford. Current research highlights the opportunities and challenges such

partnerships may have for educational improvement (Lopez Turley & Stevens, 2015). As the field has recognized the value of RPPs, tools have been developed to help foster them.[1] But, there remains a need for examples of how partnerships work (Coburn & Stein, 2010). In this paper, we describe the partnership between the National Center on Scaling Up Effective Schools (NCSU) and the Fort Worth Independent School District (FWISD) to build student ownership and responsibility (SOAR). NCSU is focused on building capacity in large, urban districts to scale effective practices in high schools. Our process of improvement relies on three core principles. First, a prototype is built to reflect the core elements of programs or practices that have been shown to be effective locally.  Second, rapid-cycle testing is used to allow the prototype to be revised in ways that adapt it to a school or grade-level context. Third, the work occurs within a RPP that strives to both take advantage of local expertise and build local ownership to scale and sustain effective practice (Cohen-Vogel, Cannata, Rutledge, & Socol, 2016). By outlining the organizational structures established to enact the partnership and roles of our various partners, we provide an in-depth look at how one RPP operates. We begin by describing the concept of an improvement community as one type of RPP, identify several types of improvement communities currently operating in educational systems, and define the key features of improvement communities. Then, we outline the specific improvement communities that are central to the Center's work, highlighting how these structures help us enact our RPP. We end with our reflections about how the partnership created new roles for both researchers and practitioners as well as the challenges and opportunities that accompanied those new roles.

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[1] http://wtgrantfoundation.org/RPP; http://researchandpractice.org/

## Understanding Improvement Communities

***Why Improvement Communities?***

Partnerships are at the core of our Center's approach. And, they are there because, without them, we believe that there will continue to be a disconnect between the identification of effective practices and their successful implementation at scale. Educational researchers have identified and developed numerous programs with evidence of positive impact on student outcomes. Yet attempts to scale those effective practices—even those identified by highly rigorous research—see the positive impacts identified in the original research often diminishing as the program is scaled (Chambers et al., 2013). Traditional approaches to program implementation at scale assume that the innovation is optimally constructed in relatively early stages of development and that changes to the specific practices of the innovation lead to reduced benefits (Chambers et al., 2013; Glennan et al., 2004). Under this model, implementation across new sites emphasizes complete fidelity to the practices used in initial efficacy trials and the inevitable adaptation that occurs leads to fewer positive outcomes than what was identified in the efficacy trials (Chambers et al., 2013). The reasons for the diminishing returns as programs are scale are complex, and include the lack of teacher buy-in or understanding of the innovation, lack of local capacity to implement ambitious programs, and lack of attention to alignment with the organizational context where the innovation will be implemented (Berends et al., 2002; Cohen, Peurach, Glazer, Gates, & Goldin, 2013; Glennan et al., 2004). For this reason, approaches to scaling up have moved away from the replication with fidelity model to a model that "conceptualizes scale-up as a nonsequential process of interaction, feedback, and adaptation among groups of actors" (Glennan et al., 2004, p. 27). Under this model, partnerships between researchers and practitioners foster a long-term focus on developing knowledge not only about

the program itself, but the process of implementation and sustaining organizational change (Fishman et al., 2013).

NCSU uses a RPP to build capacity of school districts to implement new practices at scale—focused not only on spreading an innovation to large numbers of schools and teachers, but also enacting new practices with depth and sustainability (Coburn, 2003). Specifically, our model uses a RPP that situates the identification and development of effective practices within the contexts in which they will be implemented in order to achieve deep and lasting change. Like Fishman et al. (2013), we believe that without such a partnership and without a focus on the *process* of implementation in addition to the particular *practice* that is being implemented, we will not be successful in achieving scale. Successfully scaling educational improvement requires developing learning communities that involve educators across institutions and at multiple levels within the school system (Elmore, 2016; Fullan, 2016).

Compared to the conventional research-to-practice pathway that emphasizes fidelity of externally designed elements without sufficient attention to local contexts, NCSU has developed an integrative model of research, design and development, implementation, and scale up that seeks to address the persistent research-to-practice gap (Cohen-Vogel et al., 2016). An authentic RPP is a core principle of this model as we seek to disrupt traditional, bounded roles, taking advantage of native knowledge and expertise, ensuring that practices are aligned with local goals and policy initiatives, and boosting the rate at which change can occur. Although traditional research often tries to keep researchers "outside" the innovation being tested, our continuous improvement model purposely *involves* researchers in innovation design and revision. Through this collaboration, researchers "are expected to become smarter about how to target issues that matter" to educators and about "how to conduct solid research within the constraints of

practicing education systems" (Means & Harris, 2013, p. 360). The role of participants in the research is different too. Whereas traditional research often treats participants (e.g., teachers) as subjects, NCSU's improvement model includes participants in the design process, involving them as equals in the work.

While RPPs can take many forms, our partnership is enacted through an improvement community, which serves as a mechanism to mobilize collective knowledge-building around complex problems and potential solutions, with various partners each contributing different forms of expertise (Bryk et al., 2011; D'Amico, 2010). Educational and other social problems have a complex set of causes that require multiple types of knowledge and effectively utilizing that knowledge requires a "diverse colleagueship of expertise" that are "organized in ways that enhance the efficacy of individual efforts, align those efforts and increase the likelihood that a collection of such actions might accumulate towards efficacious solutions" (Bryk et al., 2011, p. 5). It is through continuously engaging multiple stakeholders in a process of ongoing feedback that creates the organizational learning necessary for effective adaptation to context that fosters sustainability (Chambers et al., 2013). This collective knowledge-building continues after the initial innovation is developed, as partners test the practices and share their learning with the broader partnership.  Our partnership with FWISD initially involved three high schools, providing the opportunity for the collaboratively designed practices to be tested *at the same time in multiple settings*. Information about how the prototype works in each setting comprised what Englebart (1992) called "a knowledge infrastructure" upon which the improvement communities rely as they set plans for taking their innovation to scale. Importantly, the improvement communities that comprise our partnership are networked together, facilitating the social

learning process across institutions to more effectively build collective knowledge about the innovation and its implementation (Bryk et al., 2015).

While our model uses Networked Improvement Communities, improvement communities can take many forms, such as hub organizations that facilitate school-wide improvement efforts in outlet schools, professional learning communities, and communities of practice, (Bryk et al., 2011; Hord, 2008; Peurach & Glazer, 2012; Stoll & Seashore Louis, 2007; Wenger, 2000). We now describe examples of these various improvement communities and their common features.

***Examples of Improvement Communities: NICs, Hubs, PLCs, and Practice Communities***

Networked Improvement Communities (NICs) are a form of improvement community most closely associated with improvement science, and has been recently developed by the Carnegie Foundation for the Advancement of Teaching (LeMahieu, Grunow, Baker, Nordstrum, & Gomez, 2017). Englebart (1992) first articulated the idea of organizations working in networks focused on improving their ability to improve—that is, a "groupware" structure that focuses not on improving a basic function for the external client or customer, but also working across organizations to "boost the rate at which the rate of improvement can increase" so that organizations are "better able to handle complexity and urgency." When organized within a NIC, individuals schools learn not only from their own experience, but from the experiences of other schools who are focused on solving similar problems of practice, thus systematically pooling individual insights into collective knowledge (LeMahieu et al., 2017). The knowledge infrastructure necessary to reach this organizational capability is particularly important when trying to achieve scale, as processes that work in particular cases require significant transformation to ensure they are appropriate at scale (Englebart, 1992). This infrastructure includes a common framework for thinking about the shared problem of practice, a hub

organization to coordinate work across contexts, and a process to spread knowledge among network members (LeMahieu et al., 2017).

NICs are both design communities and learning communities that engaged in research and development while also arranging human resources and knowledge-based tools to organize improvement work (Bryk et al., 2011). NICs form around established goals that multiple organizations want to achieve and use a variety of tools, such as measures, program improvement maps, and driver diagrams. Further, a common protocol of inquiry, such as Plan-Do-Study-Act cycles, helps to provide a common language and system of measurement to build shared knowledge (Bryk et al., 2011). Perhaps the best example of a NIC in education is the network established by the Carnegie Foundation for the Advancement of Teaching to improve graduation rates in community colleges (Bryk et al., 2015). This NIC is organized around a high-leverage driver of low graduation rates—high failure rates in developmental mathematics courses. They have designed a mathematics curriculum and other resources to reduce these high failure rates. Working across several institutions, faculty who teach in this program test and refine the instructional resources using a Plan-Do-Study-Act inquiry protocol. As individuals test particular components, their individual work can contribute to the broader knowledge base about this program as they come together in the NIC to share tools and models for organizing their work. Working in this network, then, the knowledge gained by any individual can be accessed by those in other parts of the network. This community college pathway NIC demonstrates the potential for NICs to support educational improvement at scale as they've successfully increased course completion rates in developmental mathematics while nearly tripling the number of students served (Sowers & Yamada, 2015).

Another form of improvement community is a school reform "hub" organization that supports schools throughout a region or the country in implementing practices associated with that reform organization. These hubs may begin by a single highly successful school that wants to replicate its model or by a reform organization that has a model it wants to see replicated in schools. As noted previously, many replication efforts assume that knowledge transfer from hub to outlet is a straightforward process of communicating program information (Winter & Szulanski, 2001). High-performing hubs, however, use processes that serves to formalize three forms of knowledge: knowledge about the effective practices to be replicated, knowledge about the contextual factors that facilitate successful replication, and knowledge about the replication process itself (Peurach & Glazer, 2012; Winter & Szulanski, 2001). Creating this knowledge base requires identifying the "repetitive, recognizable patterns of interdependent actions, potentially involving multiple actors"—or routines—that make the outlets successful (Peurach & Glazer, 2012, p. 165). What makes a hub an improvement community, however, is the recognition that the knowledge cannot be easily transferred to each new outlet, but must be recreated in new contexts, and that this process feeds back to the hub to refine the routines and underlying knowledge base through both convergent and divergent thinking (Peurach & Glazer, 2012; Peurach, Glazer, & Lenhoff, 2014). For example, a high school improvement network called New Tech Network established broad design principles that individual schools adapted for their own circumstances. With this focus on local adaptive use of hub materials, New Tech Network also developed an online learning management system that served as a repository of hub-created materials and guidance for this process of adaptation (Peurach, Lenhoff, & Glazer, 2016). Successful hubs, then, have a structure to manage intellectual capital, formal processes to

recreate codified practices for adaptive use, and infrastructure to support evolutionary learning (Peurach et al., 2014).

Applying language of improvement communities to districts and schools is relatively new, yet one form of improvement communities that is well known in educational systems is a professional learning community. Indeed, establishing professional learning communities among teachers in an effort to build teacher capacity and instill processes for ongoing, embedded learning is an explicit reform effort in many school systems (Hord, 2008). Moving beyond traditional teacher collaboration, professional learning communities aim to "[organize] the educational staff to engage in purposeful, collegial learning" (Hord, 2008). Professional learning communities exist when there is "a group of teachers sharing and critically interrogating their practice in an ongoing, reflective, inclusive, learning-oriented, growth-promoting way" (Stoll & Seashore Louis, 2007, p. 2). The research identifies five key components to developing professional learning communities: shared beliefs and values, shared and supportive leadership, supportive structural conditions, collective intentional learning, and shared personal practice (Hord, 2008). Central to the formation of a professional learning community is a shared vision and goals so that individual teachers see how their work is focused on a common purpose, thus reflecting the improvement community emphasis of shared problems and purpose (Hord, 2008; Stoll & Seashore Louis, 2007). Members of professional learning community also engage in networked learning where members are engaged in intentional and sustained activities in order to learn from one another and learn on behalf of another so that knowledge gained from one individual is shared with the wider network (Jackson & Temperley, 2007).

Communities of practice can exist in many forms and do not always involve formal organizations that structure them; yet organizations by their nature consist of interconnected

communities of practice and organization learning is the way in which "an organization knows what it knows and thus becomes effective and valuable as an organization" (Wenger, 2000, p. 8). Emphasizing how improvement communities are, first, communities in which individuals engage in similar or linked work in social settings, and second, involve learning to improve practice within the community, highlights how improvement communities draw on ideas from social theories of learning that describe communities of practice. The concept of a community of practice emphasizes that individuals display knowledge when they demonstrate competence in a shared enterprise and that the process of learning is not just about recall of discrete information, but the ability to make meaning of information in particular contexts (Wenger, 2000). While communities of practice differ from other improvement communities in that they may not have official markers of membership, involvement in a community of practice does come with expectations on members to engage in the shared enterprise and make use of shared routines that mark the practice (Wenger, 2000). In these ways, communities of practice have shared problems of practice and informal (yet known) rules for resolving those problems. Organizations that recognize the value of successful communities of practice in executing a strategic plan, solving everyday problems, fostering talent development, and otherwise increasing capacity for knowledge management and development can take steps to actively cultivate these communities for greater organizational learning (Wenger, McDermott, & Snyder, 2002).

Though they take varied forms, improvement communities share several common features. First, they are intentionally formed or have a defined membership, rather than a loose coalition of individuals (Bryk et al., 2011). Second, they have established norms of interaction and expectations for participation (Bryk et al., 2011). Third, they are formed around shared problems of practice and use common tools, routines, or artifacts to define their work (Bryk et

al., 2011; Coburn & Stein, 2010; Penuel, Fishman, Cheng, & Sabelli, 2011; Peurach & Glazer, 2012). Finally, the emphasis is on collective learning or improvement (Bryk et al., 2011; Stoll & Seashore Louis, 2007).

## NCSU's Improvement Communities

NCSU's partnership with districts and schools involves the development of two key structures that operate as networked improvement communities. These are known as the District Innovation Design Team and School Innovation Design Teams. Before describing these two communities, we first provide context for our joint work in FWISD, including background on the district prior to beginning this partnership.

The Fort Worth Independent School District (FWISD) is an urban district that serves approximately 87,000 students in and around Fort Worth, Texas. The student body is approximately 66% Hispanic, 22% African American, and 11% White, with the remaining 1% composed of students of American Indian, Asian, and Multi-racial descent. Around 80% of the students qualify for the Federal free and reduced lunch program and about 30% of the students are English Language Learners. Like most urban systems, FWISD struggles with improving literacy competency and mathematics achievement for all student populations, especially for its African American and Hispanic populations and it struggles with increasing graduation rates. Increasing high school completion rates and improving college readiness are areas that receive an enormous amount of time and resources. The work has produced some promising statistics such as an increase in graduation rates from 72.1% in 2007 to 81% in 2014, the latest year with final statistics. Simultaneously, FWISD has seen dramatic increases in the number of students receiving Dual Credits, Qualifying Advanced Placement Scores, and State Issued Industry Licensures and Certifications.

Prior to 2005, numerous entities conducted research within FWISD. In 2005, the newly appointed superintendent, Dr. Melody A. Johnson, put a halt to most of this external research, citing the concern that the research activities were serving the needs of the research institutions but not the needs of the students or the district (Munoz & Rodosky, 2015). In 2007, Vanderbilt Professor of Mathematics Instruction, Dr. Paul Cobb approached the district about engaging in a type of RPP that has since come to be known as Design-Based Implementation Research (Cobb, Jackson, Smith, Sorum, & Henrick, 2013). The Fort Worth-Vanderbilt partnership developed into a fruitful relationship that was associated with the smooth implementation of a rigorous National Science Foundation endorsed curriculum that had been met with resistance from teacher and parents in other districts around the country.

This successful partnership between the district and researchers created a context within the district that opened decision makers' minds when representatives from the National Center on Scaling Up Effective Schools approached the district about forming a second RPP focused on improving outcomes for high school students. Especially appealing to district leadership was the fact that the work would study practices within FWISD's own high schools that showed greater than predicted student achievement with the goal of distilling the effective components of the practices within these schools and then working with teams of district and school leaders to adapt the practices to the unique context of other district high schools. It is unlikely that district decision makers would have responded positively to the invitation if previous work had not already fostered a positive disposition toward RPPs. The following section describes the critical components and structures of this collaboration.

*District Innovation Design Team*

The purpose of the District Innovation Design Team (DIDT) is to build district capacity for identifying problems, designing and testing solutions, and supporting improvement at scale (King, Haferd, Fabillar, Avery, & Fuxman, 2012). In this sense, the DIDT serves as the "owner" of the joint work for the district, with responsibility for making district-wide decisions and being the "keeper of the vision" for the designed innovation. The focus of the DIDT's work is to develop an innovation for building student ownership and responsibility (SOAR). This focus, which was called the design challenge, was identified by initial research in the district as a key differentiating characteristic between higher and lower performing high schools (Cannata, Smith, & Taylor Haynes, 2014; Rutledge & Cannata, 2016). With a focus on SOAR, the DIDT was tasked with developing an innovation that established systemic processes of academic press and support to foster student self-efficacy and engagement (see Figure 1). At the outset of this joint work, the design challenge not only emerged from research in FWISD high schools, but was also aligned with a key district priority of increasing student engagement. This definition of student ownership and responsibility builds on a robust empirical research base on efficacy and engagement in schools. Students who have strong, positive mindsets and a high degree of self-efficacy tend to exhibit more positive academic behaviors, choose more difficult tasks, demonstrate more persistence despite setbacks, expend greater effort, exhibit more self-regulatory strategies, and have higher achievement across academic areas (Farrington et al., 2012; Pajares & Urdan, 2006; Schunk & Pajares, 2005; Zimmerman, 2000). Students with high academic self-efficacy also demonstrate both behavioral and academic engagement (Fredricks, Blumenfeld, & Paris, 2004; Yazzie-Mintz & McCormick, 2012). We also see student ownership and responsibility as embedded within the larger category of personal qualities, such as grit,

growth mindset, and perseverance, that enable students to succeed in school and life (Duckworth & Yeager, 2015; Dweck, 2007; Farrington et al., 2012).

The DIDT had four primary responsibilities: 1) studying and interpreting research findings to determine implications for innovation designs; 2) using rapid prototyping to develop an innovation to be implemented, tested, and adapted in three high schools; 3) developing a process for monitoring implementation and regularly collecting data on indicators of progress; and 4) using evidence on implementation and initial outcomes to refine innovation designs, revise the implementation process, and strategically plan for supporting both continued scaling in to deepen change in initial innovation schools and scaling out effective practices to other schools in the district.

The DIDT was established in Winter 2013, with the first meeting in February 2013 (see Table 1 for a timeline). With the Center's model focused on alignment to both the district and school context, the DIDT was comprised of leaders from both the district and school level, as well as researchers and technical assistance providers to facilitate the DIDT's work. The goal was to identify 18-20 individuals with a range of responsibilities. Figure 2 illustrates the composition of the DIDT, including district central office officials, a district coordinator, representatives from a variety of schools, and university researchers. The school-based representatives include at least two members from each of the innovation schools that serve as the initial sites of implementation (known as innovation schools). There are also school-based representatives from other schools in the district (known as at-large schools). This composition was purposeful. Central office members were included so that so that they could speak to the larger district priorities to ensure alignment, could check that adequate district resources would be available, and could stay on top of any potential district-wide constraints (i.e., new

curriculum, teacher evaluation). Initially, the central office representation included someone from the district research office, curriculum director, and individuals charged with supporting either advanced programs or specific curricular areas. Over time, the curricular support personnel were replaced with leaders who supervise and support principals. The DIDT included representatives from the innovation schools since they would be the first sites of implementation and one of the goals was to think about how implementation with adaptation at the school happens. Representatives from other "at large" high schools were included to represent the views of other schools in the district in which the innovation might be scaled eventually. Researchers participated in the design process to provide expertise on the case study findings and other high leverage practices identified in the larger research. Finally, a district coordinator served as a liaison between the district and school personnel and the external partners and helped to orchestrate logistics of all meetings.

With the exception of the researchers, DIDT members were selected by district senior leadership, with input from the district coordinator. District leadership was encouraged to consider the following criteria when selecting DIDT members:

- three or more years of demonstrated experience in leading change in schools or implementing programs related to the design challenge,
- identified by colleagues as a well-respected opinion leader in the school and/or district,
- interest and commitment to serving on the DIDT,
- evidence of being open-minded with a willingness to listen while exploring new ideas and ways of thinking about change,
- effective verbal and written communication and presentation skills,

- evidence of ability to experiment and tolerate ambiguity,

- ability to examine and use data as part of a decision-making process, and

- willingness to commit time necessary to participate in team meetings and activities.

The role of the DIDT and the specific members of the DIDT was discussed in the first two sessions. While there was no explicit set of norms for interaction, the facilitators strove to create an environment where members worked collaboratively in diverse groups. For example, facilitators repeatedly emphasized that the DIDT was "one district team" and purposefully used cross-school groups to foster that mindset. The composition of the DIDT intentionally omitted school principals due to concerns that teachers would defer to the perspective of principals and thus their presence would hamper the open exchange of ideas. Instead, after each DIDT session, facilitators met with the innovation school representatives and their principals to communicate what transpired at the last session and obtain feedback.

There were several documents that guided the work of the DIDT. First, the research team provided a report to the DIDT that described the research conducted the prior year in the district, focused on identifying effective practices that differentiated higher and lower performing high schools. This report included a definition of student ownership and responsibility (Taylor Haynes, Cannata, & Smith, 2013), as described above. Included in the definition was a set of attitudes and behaviors that students display if they have ownership and responsibility of their academic success and four core elements of schools that support students in developing that ownership and responsibility. As the work progressed and an initial innovation was developed, the DIDT decided to emphasize fostering a growth mindset among students as a way to build student motivation to engage and creating a school-wide problem-solving process as a way to

teach students explicit skills that will make that engagement productive for learning (Dweck, 2007). With these two concepts defining the innovation, additional documents that outlined the core strategies of the innovation, key principles for implementing those core strategies, and alignment to district priorities were created.

### School Innovation Design Team

In Fall 2013, after the DIDT had developed the initial outline of the innovation, each of the three innovation high schools established School Innovation Design Teams (SIDTs) to further develop, adapt, test, and implement the innovation in their school. Each SIDT had five to seven members, in addition to the DIDT members from their school who served as coordinators of their respective SIDT. Each SIDT was composed of teachers and, in one case, an assistant principal, with teachers representing a range of experience and subject areas. SIDT members were identified and sometimes recruited by the DIDT members in their school, but were ultimately appointed by the principal. DIDT members and principals were encouraged to identifying SIDT members based on their evidence of leadership, either through formal roles (e.g., department head, committee chairs) or informal roles (e.g., opinion leaders, highly respected among peers, highly accomplished teachers) (King et al., 2012).

When SIDT members were being oriented to the work, researchers on the DIDT provided an overview of the design challenge, while other members of the DIDT took leadership in describing the design process in which they engaged and the initial innovation. The core elements of student ownership and responsibility and list of attitudes and behaviors that students demonstrate if they have ownership were also introduced to the SIDT, as were the emerging core components of the innovation. A key tool for the SIDT was the Plan-Do-Study-Act (PDSA) cycle of continuous improvement, as this process was used to test, adapt, and implement the

innovation in their school context (Bryk et al., 2011; LeMahieu et al., 2017). Through continuous improvement cycles, the SIDTs further developed the innovation prototype and adapted it to their school context. While much of the work of the SIDT took place within their school, all SIDTs jointly met every quarter to share their learning about what they have implemented through PDSA. Through this quarterly forum, SIDTs shared across schools and came to collective understandings of how to further build student ownership and teacher support for enacting the innovation.

The DIDT and SIDTs worked together in various ways. They were connected through overlapping membership as the coordinators of the SIDT served as the school liaisons on the DIDT. The DIDT served in both a supervisory and advisory role to the SIDTs, providing guidance and support to the school-based teams. The SIDTs were ultimately responsible for enacting the innovation that was originally developed by the DIDT, but also served as key knowledge creators about how the innovation is working through PDSA cycles. At the end of each quarterly meeting, SIDTs presented their learning to the DIDT and together the DIDT and SIDT engaged in reflection on what has been learned and achieved.

Through these structures, NCSU sought to create a NIC focused around building student ownership and responsibility. Membership was intentionally formed, with attention both to the existing institutional roles that members occupied as well as their ability to participate in a collaborative process. With this in mind, network facilitators repeatedly addressed norms of interaction and expected roles of all DIDT and SIDT members. Despite this attention, we struggled to develop deep understanding of the purposes of the teams, particularly over time as turnover inevitably occurred and new members joined. The work had a clear and well-developed aim to develop student ownership and responsibility, along with common definitions and core

strategies, and shared protocols such as PDSA templates and a data analysis inquiry protocol.

With PDSA and the process of sharing PDSA findings across SIDTs and with the DIDT in

quarterly meetings, there was a focus on collective learning across the district. Despite this focus,

SIDTs developed new practices independently, so that several SOAR practices were quite unique

to a school, rather than adaptations of a more general design. This resulted in a reduced ability

for learning in individual schools to influence planning in other schools.

## Insights for Forming RPPs

### *Implications for the Role of the Researcher*

As argued elsewhere, the traditional role of researchers is transformed as they work

within improvement communities (Cohen-Vogel et al., 2015). In traditional research, especially

in the quantitative paradigm, efforts are often made to preserve objectivity by keeping

researchers "outside" of the intervention being tested. As members of improvement

communities, however, researchers are deliberately included in process of innovation design.

To illustrate, researchers within NCSU were participating members of the DIDTs. The

lead author and the rest of the research team found themselves not only interpreting research

findings for DIDT and SIDT members, but participating in brainstorming activities around

innovation design, making suggestions for important skills to include as part of the SOAR

innovation, and providing feedback to SIDT members on their developing innovation. As such,

they found themselves acting as intermediaries between the worlds of educational research and

practice. Specifically, NCSU researchers helped to "translate" relevant, empirical studies of

programs and ideas under discussion by the design team. This included framing findings and

discussing the quality of the methodologies that generated those findings in ways that enabled

the design team to engage in evidence-based decision making. Evidence-based decision-making

refers to a process wherein decisions about what services to deliver to students are made through the integration of the best available evidence, the wisdom of professionals, and the knowledge of the context (e.g., school and classroom) in which the services will be implemented (McColskey & Lewis, 2007). Researchers facilitated this process both with research they themselves conducted or obtained from the broader research base and brought to the design team meetings, and also data collected by design team members.

In addition to providing the best available evidence to the DIDT, NCSU researchers worked to both complement and develop the capacity of the SIDTs as they utilized PDSA cycles to test, implement, and scale the designed innovations (Cohen-Vogel et al., 2015). For example, they developed tools to support PDSA, provided explicit instruction in the PDSA process, and worked side by side with SIDTs to support them in the PDSA process by helping them figure out how to turn broad goals into specific aims they can test. This role, in particular, presented some challenges, requiring NCSU researchers to think carefully about balancing institutional norms of research and our partners' norms of practice. As they developed PDSA plans, for example, researchers and practitioners often engaged in the difficult process of creating instruments and data collection protocols that struck a balance between empirical rigor and the resource, time, and personnel constraints that practitioners faced in enacting them. The process also challenged the NCSU research team to alter its analytic processes to help district partners convert the data they collected into informative, accessible reports that were able to contribute to the iterative testing cycle in a "just-in-time" fashion (Cohen-Vogel et al., 2005, p. 271).

Membership within the improvement communities presented other challenges as well. We have called these dilemmas, because they have no possibility of resolution per se; instead

they represent fundamental tensions that need to be recognized by members of a partnership and part of the conversation of improvement (Ogawa, Crowson & Goldring, 1999).

One such dilemma lies in the space between the partnerships' needs and the interests of individual organizational partners. Though all partners involved in the NCSU partnership expressed a desire to increase the achievement of high school students in FWISD, differing needs threatened the partnership on multiple occasions. For example, design team members expressed frustration that there was too much time spent "planning and studying," when they felt pressure to get right down to the "doing." Given the climate around school and teacher accountability in Texas, district and school partners were under intense pressure to meet accountability standards, and at times questioned the utility of the innovation to raise student achievement in an immediate enough fashion. Relatedly, SIDT members, who were committed to SOAR and the joint work, expressed disappointment that their efforts had little observable impact on key outcomes for which they were held accountable. At the same time, researchers—well versed in the evidence that shows that reform takes time—needed district and school partners to persist for the long-haul.

Another is what is elsewhere called the dilemma of hierarchy (see Cohen-Vogel, Rutledge, Smith & Allen, working paper) With practitioners and researchers playing an equal role on the DIDT, there was what might best be described as an *absence* of hierarchy.  In this absence, researchers found themselves discussing "Who owns decision-making in an improvement community?" This discussion became particularly robust when researchers debated who should control the "boundaries" of innovation. By *innovation boundaries*, we are referring to just how far from the original design concept the SIDTs should be able to diverge as they adapt the innovation to their schools' contexts. At times, the researchers observed the DIDT (and

later the SIDTs) departing from practices with substantial support from the research base that defined the design challenge. They struggled with whether and when to intervene ensure the innovation has as strong a grounding in evidence as possible.

A third dilemma concerns time and incentives of researchers. This work had external funding, and it is hard to see this type of partnership existing without such support. While the researchers found the work personally fulfilling, they also struggled with pressure to produce peer-reviewed publications on a regular timeframe. Time spent participating in design activities on the DIDT, preparing reports for the DIDT and SIDTs, and meeting with district and school leaders to build relationships was time taken away from activities recognized by hiring, tenure, and promotion committees. Similarly, when data collection instruments for PDSA were revised to make them practical for the daily realities of schools, it created a dilemma for producing research that would meet peer review standards. Further, connecting this form of research to traditional funding streams posed a dilemma as we engaged in research around exploration, development, and implementation simultaneously.

*Implications for the Role of Practitioners*

When considering the practitioner, it is important to understand that there are many levels of practitioners within the district who are participating in the work. Each level within the district has its own set of needs, goals, challenges, and limitations. These range from the needs and goals of students to those of the school board and superintendent, and of course includes teachers, teacher leaders, assistant principals, principals, supervisors of principals and the staff and structure of the multiple departments of a district that exist to support schools in their goal of improving student outcomes. Coordinating and influencing the behaviors of these multiple levels with multiple contexts is no easy task. Leaders of RPPs need to anticipate these challenges and

establish resources to support not only practitioners and researchers, but practitioners at various organizational levels, in coordinating and organizing the work. As Fullan (2016) puts it, the work requires interaction that is top-down, bottom-up, and sideways.

Despite these challenges, the partnership offered many rewards and positive experiences for practitioners. One of the most important benefits the collaboration provided was the opportunity for design team members to step away from the daily demands of their work to study, dialogue, and debate about the core daily practices of the district and its staff. Changing outcomes for students will not happen unless the adults within a system change their behaviors. While this sounds simple, anyone who has tried to change the behaviors of other adults in their lives can quickly understand the challenge of trying to change the behaviors of hundreds of teachers and principals who are deeply attached to their daily routines. Bringing all layers of the district together in the structure of the DIDT to engage in the conversations about these challenges allowed for all of the participants to expand their perspectives and to approach the challenge with creativity and open minds.

Every layer of the organization benefitted from the process in a different way. Teachers had the opportunity to step out of their classrooms and study the broader context of their school, other schools, and the district. Their conversations, products, and presentations suggested that they gained a much broader understanding of the various roles of various levels of the district while also growing their self-confidence and sense of efficacy in leading their colleagues toward changing their practices. In short, they developed as teacher leaders (Rubin, Nguyen, & Cannata, 2015). Principals and their supervisors expressed excitement about the capacity of their teachers. Senior staff were reminded of the day-to-day challenges of the classroom teachers working with

180 children and of the principal working to meet the needs of thousands of students and parents, hundreds of teachers and myriad district and community demands.

The formation of a networked improvement community as critical structures for the work helped to develop professional networks across the district, which had few opportunities for teachers and principals to connect across schools. Positive personal bonds and "critical friend" relationships were forged among staff who traditionally were more likely to see other schools as competitors than partners. This was evident when a teacher from one innovation assumed a leadership role at another innovation school in the partnership's third year. There was a genuine sense of pride expressed by the teachers and administrators of the "home campus" as they saw their colleague promoted and the receiving school knew through the work of this partnership that they were receiving a talented and skilled new leader at their campus.

School and district staff benefitted by looking at and using data in new and innovative ways. The iterative nature of the work combined with the focus of building student ownership and responsibility required teachers to think of ways to measure and evaluate new strategies that had not been previously tested. During SIDT presentations at network meetings, teachers expressed frustrations when the tools they designed did not capture the intended data but the collaborative structure of the teams allowed for opportunities for them to redesign and retest their tools.

There were also challenges faced by practitioners—the biggest of which was time. While the full day DIDT or SIDT meetings created needed time and space for teachers and administrators to engage in this work, upon returning to their respective work environments, both groups faced the challenge of integrating their new learning with the countless daily demands of their varying job positions. However, overtime, and especially with the successes reported by the

SIDTs, the work has started to become part of the culture of the district. Further, participation in SOAR has been associated with small but positive increases in student attendance and average grades, and fewer courses failed (Cannata, Redding, & Nguyen, 2016).

In addition to the benefits of positive outcomes for students and the promulgation of a sense of efficacy for the teachers, the project has also been a reminder for central staff that without active communication and collaboration with schools, central office leaders can forget the challenges of day-to-day work on a large urban campus. Additionally, it reminded central office leaders that teachers and principals have a genuine need to be supported, both verbally and in action and resources, by senior central staff. It was critical for teachers to hear that their work was valued and important. At the partnership's outset, teachers had a tendency to view themselves as powerless to effect change within the district. For example, during the initial design phase, school-based DIDT members wanted a delineation of the existing structures they needed to work within before engaging in design thinking. District leaders expressed satisfaction in seeing that while the partnership was explicitly focused on building student ownership, the partnership also served to build teacher and principal ownership in the success of their schools. The work of this partnership served as a reminder to all layers of the organization that each respective layer are interrelated and that without collaboration and communication, the work of changing adult behaviors with a goal of improving student outcomes would never happen effectively or efficiently.

**Conclusion**

Research-practice partnerships are not for the faint of heart. They require patience, determination, resources, creativity, and stamina for both researchers and practitioners. Yet too often the focus of educational research is "whether a program works" when what is needed is

shared knowledge about "how to make a program work" across organizations at scale (LeMahieu et al., 2017). RPPs offer the possibility moving beyond the "reform du jour" to achieve deep and sustained scaling up of effective practices by re-focusing on the question of "how." It is the formation of improvement communities within RPPs that provides the social connections, creativity, trust, and diversity of expertise to accelerate the collective knowledge-building necessary for improvement at scale (Bryk et al., 2015). In this way, improvement communities can provide discipline to the messy process of adapting innovations to new contexts (LeMahieu et al., 2017).

Whether the mechanism is a research-practice partnerships, networked improvement community, or something else, achieving educational improvement at scale ultimately comes down to the developing a community of learners focused on a shared problem. Indeed, two prominent scholars of scaling educational reform have recently emphasized that improvement at scale requires developing powerful learning communities that engages stakeholders across school systems (Elmore, 2016; Fullan, 2016). In both education and business, there is a recognition that achieving excellence at scale is inherently a people-intensive process, and improvement is fundamentally about helping stakeholders learn new routines (Elmore, 2016; Sutton & Rao, 2014). Yet leading improvement communities is fraught with uncertainty and interdependent puzzles (Cohen et al., 2013). Achieving greater success at scaling up educational innovations may require developing infrastructure to support those developing and leading improvement communities (Peurach, 2016).

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**Tables and Figures**

Table 1 – Timeline of DIDT and SIDT Activities

| Phase | Time period | Improvement community participation |
|---|---|---|
| Research | 2011-12 | Initial research conducted by external research team |
| Design and Development | Winter and Spring 2013 | DIDT developed initial innovation prototype |
| Initial implementation | 2013-14 | SIDTs formed in three innovation schools; DIDT and SIDTs jointly developed initial innovation, engaging in PDSA cycles of testing |
| Full implementation | 2014-15 | SIDTs led full implementation of fully developed innovation in their school; continued engagement in PDSA cycles of testing; quarterly DIDT/SIDT network meetings to share learning and plan for scaling in and out |
| Scale out | 2015-16 | DIDT gradually assumes responsibility for facilitating network and supporting work in schools; four new schools join the network; SIDTs continue to engage in PDSA and share learning in quarterly meetings |
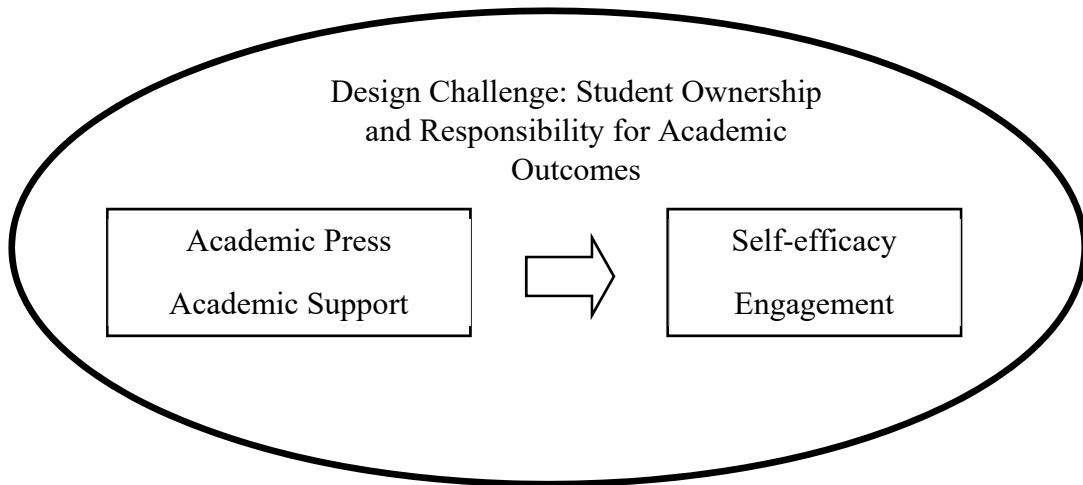
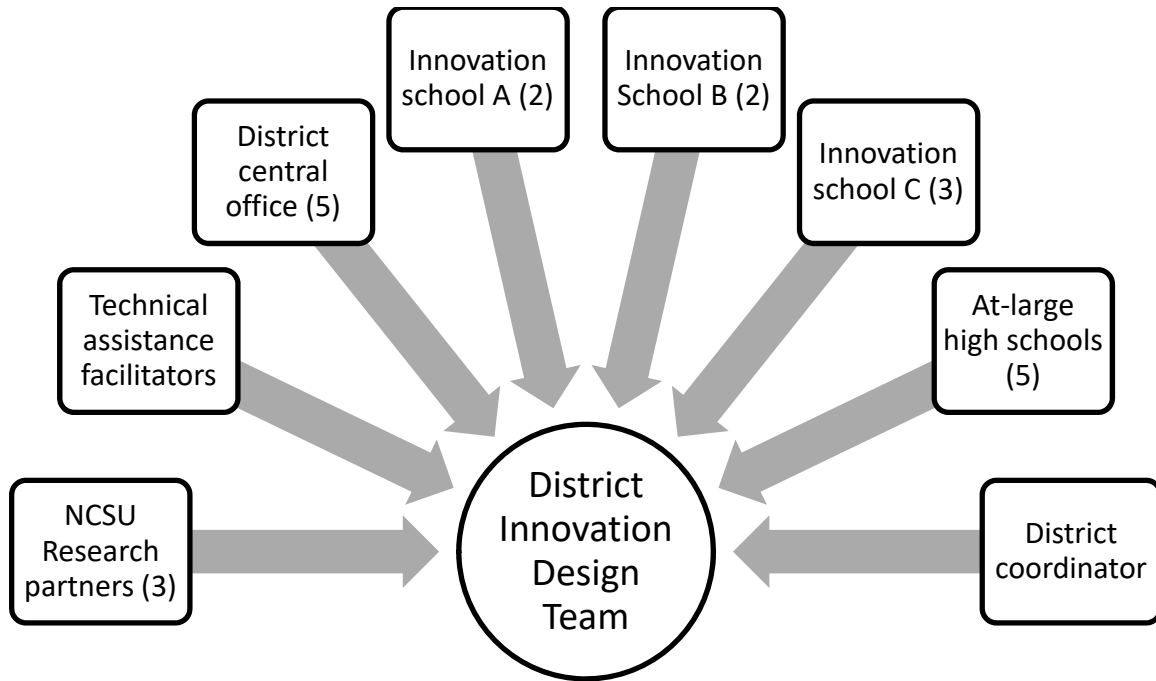Figure 1 – The Design Challenge: Increasing Student Ownership and Responsibility

Figure 2 – Composition of District Innovation Design Team