Title: Consensus versus Concreteness: Tensions in Designing for Scale

Short Title: Consensus versus Concreteness

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Consensus versus Concreteness: Tensions in Designing for Scale

Abstract

Substantial research on reform implementation highlights numerous challenges to implementing educational innovations at scale with depth and sustainability, yet new reform efforts continue to encounter many of the same challenges. This has led to concerns about how research informs practice and the development of educational interventions, as well as calls for researchers to work in partnership with practitioners to design, implement, and scale educational innovations. Through a case study of a research-practitioner partnership, this paper sheds light on the tension between developing a well-specified innovation and attending to the local context by using a framework that emphasizes how design factors shape subsequent implementation. Two interconnected main themes emerged from our analyses: a tension between achieving the necessary concreteness in the design and a process that valued collaboration and consensus, and how resolving this tension was influenced by pre-existing conditions at the school level.

Introduction

Extensive research on school reform implementation highlights how implementing at scale with depth and sustainability is enormously challenging (Bodilly et al. 2004; Stringfield and Datnow 1998). Despite this substantial research base, new reform efforts continue to encounter many of the same challenges of past reforms (Payne 2008), leading to concerns about how research informs practice and the development of educational interventions. Recent scholarship on the research-practice divide suggests that conventional ideas about the Research-Development-Utilization cycle are not adequately addressing the needs of practitioners or leading to interventions that can be implemented and scaled with depth and sustainability (Bryk et al. 2011; Coburn et al. 2010). The emergence of design-based implementation research reflects this need for researchers to work in partnership with practitioners to design, implement, and scale educational innovations (Penuel et al. 2011).

A key rationale for new approaches to research-practitioner partnerships is that achieving success at scale is about more than the identification of effective practices but also the ways in which the practices are implemented (Penuel et al. 2011). Indeed, local decision makers need not only research on *what* works, but also *when* and *how* to know the range of adaptations and contexts in which positive outcomes are likely to be achieved. Research has long recognized educators adapt innovations to their context and this is, in many ways, unavoidable (Datnow and Park 2009; McLaughlin 1987). At the same time, substantial challenges exist when major decisions about the focus and content of the reform is left to local decision-makers (Cohen et al. 2013; Nunnery 1998). Less is known about how to balance the appropriate amount of local adaptation.

This paper is a case study of a new research-practitioner partnership that sought to balance the development and implementation of a district-wide innovation with local school adaptation. By examining the development and implementation of an innovation focused on building student ownership and responsibility, this paper sheds light on the tension between developing a well-specified innovation and attending to the local context of individual schools who are implementing it. The paper begins by reviewing the literature on reform implementation, highlighting how four design factors shape subsequent implementation. Second, we provide a brief overview of the research-practitioner partnership in which the current work is situated. Third, we describe the data that served as the evidence for constructing this case study and analytic framework used. Fourth, we report the findings, focusing on the four design factors followed by two themes that cut across these factors. We end with a discussion of implications for future research and other research-practitioner partnerships.

A Framework of Design Decisions

Involving Local Actors in Reform Design

The comprehensive school reform movement—and studies of its implementation and outcomes—has generated significant knowledge about the relationship between reform ideas and how they are implemented and scaled. This research indicates there are several challenges inherent in designing, implementing, and scaling up interventions, including lack of teacher buy-in and participation (Glennan et al. 2004; Nunnery 1998), inadequate attention to the organizational context in which practices are to be implemented (Bodilly et al. 2004), and conflicts between designs and other district programs (Berends et al. 2002; Sanders 2014; Stringfield and Datnow 1998). Involving local actors in developing reforms for their context has

been intentionally included in some reforms (Rowan et al. 2009), probably because lack of attention to local context has been key stumbling blocks for implementation (Datnow and Park 2009; Supovitz 2008). Further, local adaptation becomes inevitable as reform designs are not enough in and of themselves to successfully reform schools and improve student performance (Berends et al. 2002). This attention to local context is particularly important for achieving scale as innovations must be able to fit with contexts that vary greatly in organizational structure, buy-in, capacity, and funding while coping with change, promoting ownership, building capacity, and enable effective decision-making (Cohen et al. 2013; Peurach and Glazer 2012).

At the same time, there are two main drawbacks of allowing for too much local development of reform: the need for clear expectations on what the reform is asking implementers to do and the need for access to training and expertise to build teacher capacity in enacting those expectations. First, reforms are most effectively implemented and have larger impacts on student learning when they have a well-specified design (Cohen et al. 2013; Nunnery 1998; Rowan et al. 2009). When a substantial amount of the reform development is intentionally placed in local hands, there are fewer changes in practice than when the reform has sufficient specificity from an externally developed program (Desimone 2002; Nunnery 1998). Second, to successfully implement a reform, educators need sufficient training and clear guidance on what is expected of them; the more specific the guidance and the greater the access to technical expertise, the easier it is for educators to understand what they should be doing (Berends et al. 2002; Desimone 2002). Furthermore, improvement efforts that intentionally build in substantial local adaptation require capacities such as time, expertise, and collaborative ability that teachers may not have, particularly in low-performing schools (Berends et al. 2002; Cohen et al. 2013; Datnow et al. 1998).

Design Factors that Shape Implementation: Design Emphasis, Complexity, Implementation Support, and Innovation Engagement

Parsing the research on the opportunities and challenges with local development of reforms suggest that program developers need to carefully navigate how to provide the necessary specificity and quality training while providing room for alignment with local context and a sense of ownership. In short, the literature suggests it is less about the locale of reform development than how the reform design itself addresses four key factors that shape how the reforms are subsequently adapted and implemented (Shiffman et al. 2008). These four design factors are: design emphasis, innovation complexity, innovation engagement, and implementation supports.

Design emphasis highlights interrelated components by which the major elements of the reform are identified: the features that are considered most central to the reform, the reliance on a particular organizational condition, and how the core features are sequenced (Shiffman et al. 2008). In short, design emphasis provides the overall picture of where and how the reform practices are intended to take place. The specificity of these practices is important as more specific practices provide more guidance for implementation (Desimone 2002). Similarly, when reforms seek only to build professional commitment to a broad idea and emphasize local adaptation in how that broad idea is achieved, there are fewer changes in instruction or student learning (Rowan et al. 2009). In short, for reforms to succeed, there needs to be clarity in the major elements and what is expected from teachers and administrators (Berends et al. 2002; Desimone 2002).

The second design factor focuses on the complexity of the innovation, which highlights the difficulty local actors encounter while enacting the design (Shiffman et al. 2008). The more complex the design, the more local actors will experience challenges in making sense of the reform practices and implementing them in practice (Supovitz 2008). This complexity can be disaggregated into two components: level of abstraction and technical difficulty. Similar to design emphasis, if the design is too abstract, it will not provide the necessary specificity for local actors to translate them from ideas into actions (Desimone 2002; Nunnery 1998). The technical difficulty is the level of skills required in a particular area to complete a design component. Design components are likely to have variation in the level of technical sophistication needed for implementation, and thus the need for teacher learning (Desimone 2002). The greater the degree of complexity in either component, the greater the difficulty practitioners will experience with implementation.

Some difficulty with implementation is expected regardless of the complexity, which is why the third design factor emphasizes the need for implementation support and monitoring to the local actors (Desimone 2002; Shiffman et al. 2008). Implementation supports that are likely to facilitate implementation are teacher training, classroom-based assistance, direct communication with a design staff or reform leader, and common planning time (Bodilly 1996; Shiffman et al. 2008). Teachers also need professional development that includes explicit modeling of practices, example materials, and interactions with trainers who have deep knowledge of the design (Nunnery 1998). Establishing networks of support where teachers have frequent and deep connections to reform expertise and learning opportunities embedded in daily practice fosters sustainability and teacher commitment to reform practices (Camburn 2010; Coburn et al. 2012).

The final design factor is innovation engagement, which focuses on how the innovation builds commitment and engagement in local actors (Shiffman et al. 2008). One component of innovation engagement is the local actors' commitment as a condition of participation and co-construction of the innovation. Teachers, for example, should engage in the reform ideas in meaningful ways through embedded learning opportunities and participative decision-making to build commitment about the reform (Camburn 2010; Devos et al. 2014). Related to this component is the level of engagement that happens through altering teachers' and leaders' work lives. When the innovation affects the teachers' work in meaningful ways, not just necessary documentation or required attendance, then teachers are more likely to become engaged (Shiffman et al. 2008). This individual level of engagement is even more powerful when there are shared perceptions of the problems that the reform is tackling. If the teachers share a common perception of the problems being addressed by the design, then their level of engagement is higher as the design resonates with them as a group on some levels. If there were a lack of shared perceptions, additional efforts would be needed to successfully engage teachers. Arguably the most effective and motivating source of engagement, however, is the teachers' perceived effectiveness of the innovation. When they are able to witness or experience evidence of success, they are more motivated to do the work required for successful implementation.

Context

This paper describes the process of developing an intervention to be implemented and scaled up within a large district through a collaborative partnership between researchers and the district. This partnership established three key features to build buy-in among local implementers and ensure alignment with district and school contexts. These key features were that the design

effort was 1) based on research conducted in the district to identify effective practices, 2) centered around building capacity of a district design team, and 3) emphasized the creation of a singular district innovation with adaptation to local school context.

The work began in 2011-12 with the intensive study of four high schools in the district—two chosen based on relatively high value-added indicators and two chosen based on relatively low value-added indicators—to identify the programs, practices, and processes that differentiated the higher and lower performing high schools. The findings from this initial research established the "design challenge" of developing Student Ownership And Responsibility (SOAR) (Identifying Reference 2013) that became the focus of subsequent work. A District Innovation Design Team (DIDT) was established and charged with developing an innovation addressing the design challenge that would be implemented in three high schools (known as innovation schools). The DIDT had 23 members, including two to three representatives from each innovation school, representatives from six other high schools, five representatives from the district central office, three external researchers, and a DIDT coordinator who served as a communication bridge between the external personnel and the district. The DIDT was facilitated by an external technical assistance organization. Over a seven-month period, the DIDT met monthly for two days to learn about the design challenge, conduct needs analysis, and develop an innovation prototype. We refer to this phase, which took place from February 2013 to August 2013, as Phase 1.

In Phase 2, School Innovation Design Teams (SIDTs) were established in each of the three innovation schools and consisted of six to eight individuals, nearly all of whom were teachers. The innovation school representatives on the DIDT served as coordinators for their SIDT. The SIDTs were charged with taking the innovation prototype that the DIDT developed

and engaging in further development, testing, and adaptation to their school, as well as planning for full implementation the following year. During the 2013-14 school year, the SIDTs and DIDT had six face-to-face meetings that lasted one or two days, four webinars, and two after school meetings. The 2014-15 school year saw full implementation, although an examination of implementation is beyond the scope of this paper. This paper is focused on the design and development phase of the DIDT in early 2013 (Phase 1) and the work of the SIDTs in 2013-14 (Phase 2). Table 1 provides descriptive information on the three innovation schools and the composition of their SIDTs.

Data and Methods

In addition to the three senior researchers who served on the DIDT to provide research expertise, other project researchers attended all design sessions to take fieldnotes, audio record session discussions, and collect artifacts. After each session, all researchers prepared a reflection form that served as additional fieldnotes. Interviews were also conducted with participants at several points in the process. Facilitators were interviewed twice in each phase and all researchers and DIDT members were interviewed at the end of both phases. A random sample of SIDT members was interviewed at the end of Phase 2. Table 2 provides additional details on the amount and type of data collected and analyzed.

Following data collection, the research team conducted an in-depth reconstruction of the DIDT/SIDT process. First, we engaged in a process of data reduction with the meeting audio recordings. Audio data were not transcribed in their entirety due to their length and complexity. Instead, researchers listened to each recording and utilized reflection forms to partially transcribe and synthesize data falling within our analytic framework and important emerging themes. This

framework includes: attitudes and engagement; delivery of learning about design challenge implementation, participant understanding of design challenge and implementation, the extent to which the design process adhered to principles of good design, participant perceptions of the final design, and key points to understand the process. Additional detail on this coding framework is found in Table 3. Second, all data were systematically analyzed through directed content analysis (Patton 2002), according to this same framework. The research team built reliability by simultaneously coding an initial set of documents, consisting of examples of each type of data collected. The team then met to discuss questions, issues and areas of misconception, and to gauge inter-rater reliability. These meetings continued for the duration of the coding process and memo writing process.

Third, after this initial reliability-building period, coders engaged in cycles of coding, memo writing and discussion for each session. Researchers were assigned to code all data associated with a particular day-long session and write a memo that synthesizes the evidence for that session around the analytic framework. Fourth, working with the comprehensive session memos, feedback form data, interviews, and meeting minutes, researchers synthesized the data within a single component of the framework (i.e., participant understanding of the design challenge). This process resulted in the production of a summary memo for each phase.

Through this first analytic process, several key themes about the relationship between collaboration and consensus-building, the role of local adaptation, and developing required specificity emerged. We recognized that the framework of design features by Shiffman and colleagues (2008) could help to explain these themes. A second coding and analytic process was used to focus the analysis around the four design factors (design emphasis, complexity, innovation engagement, and implementation support and the three emergent themes of

collaboration, local adaptation, and specificity). In this process, two researchers coded the comprehensive session memos and summary memos that were produced in the prior analytic process, as well as two documents that described the core features of the design. The two researchers engaged in a similar reliability process as the one described above to ensure they were applying the coding framework similarly. Then, we summarized the evidence under each code to draw out the main themes as described below.

Findings

Design Emphasis

The first factor, design emphasis, provides the landscape of where and how the reform is to be implemented and calls attention to what features are considered most central to the reform, reliance on a particular organizational condition, and how core features are sequenced. Our findings indicate that the DIDT and SIDTs struggled to achieve concreteness while deciding on key design elements. Specifically, we found that the behaviors, ideas, practices, and structures that were emphasized by the innovation lacked specificity and depth, there was discussion (but little agreement) around the use of common organizational structures or specific practices, and there was disagreement about how the various elements should be sequenced. We describe each of these findings in turn.

First, both the DIDT in Phase 1 and the SIDTs in Phase 2 struggled to develop an innovation with specificity and depth. In Phase 1, the design process was structured so most decisions about the innovation were made in the last three sessions after members had time to wrestle with broad ideas. Yet these sessions were hampered by a lack of conceptual clarity. For example, in the fourth session, the DIDT began discussing how the innovation would incorporate

a common language that would form the basis of a common school culture and members struggled to explain how the practices discussed as part of the innovation contributed to this common language. The innovation design that emerged from Phase 1 outlined a broad focus on growth mindset and problem-solving but did not identify specific strategies beyond a reference to professional development. Unsurprisingly, multiple members expressed frustration over this lack of specificity. One DIDT member concluded, "I think that it's necessary that we first finish up what the plan is...I can't be confused about what the plan is or unclear of what the plan is if it's my responsibility to teach others and bring others in on said plan."

This lack of concreteness extended into Phase 2 as DIDT members sought to introduce the new SIDT members to their work. The first session of Phase 2 provides evidence that DIDT members lacked a common deep understanding of growth mindset as some members provided broad descriptions such as "capable" and "adaptable." Even after significant testing and further development by the SIDTs, the DIDT still had difficulty outlining specific practices that comprised the innovation. For example, the DIDT met near the end of Phase 2 to decide on the innovation's "non-negotiables," or the practices that would be expected of all schools. Five non-negotiables were decided, but they were amorphous, including: (1) campus continuity of language, culture, and pedagogy around growth mindsets and problem-solving; (2) teaching growth mindset and problem-solving lessons; (3) embedding growth mindsets and problem-solving in classroom context; (4) applying growth mindsets and problem-solving as a school-wide process; and (5) providing ongoing professional development. Similar to Phase 1, these non-negotiables reflect broad ideas rather than specific practices. For example, specific practices that teachers could use to embed growth mindset in their classroom practice were not specified, despite significant discussion about what those practices could be.

This lack of concreteness in the innovation design persisted despite the presence of fully developed lessons on growth mindset and problem-solving. The preparation and piloting of these lessons represented a significant step forward in innovation development. However, they still left many questions for the SIDTs to decide for themselves, such as when and how teachers should deliver the lessons and how much flexibility teachers had in adapting the lessons. Another document that provided specificity for the design team outlined key objectives, guiding principles, and a list of potential tools for implementing the non-negotiables. The intention was to provide guidance as members tried to maintain integrity to the non-negotiables while adapting for their school context. Despite the potential value of this document, there was no opportunity to discuss it until the final session, when much implementation planning had already taken place.

Related to this lack of concreteness in defining the innovation practices is that there was little agreement around organizational structures necessary for implementation. The design challenge outlined four core elements that described how schools support students in developing ownership and responsibility; one core element was "organizational supports to help students meet high expectations" such as how the school day is organized and intervention supports for students. In Phase 1, however, organizational supports for students became redefined as teacher professional development. Throughout both phases, a number of other organizational structures were discussed, such as a common school-wide planner, common posters in classrooms, and creating dedicated time for the innovation, although the use of any of these structures were left up to individual schools to decide.

Another finding is that there was little agreement about how the two main components—growth mindset and problem-solving—would be sequenced and the relationship between them. Across several instances, growth mindset was sequenced prior to problem-solving. For example,

on the first day of Phase 2, DIDT members decided to "focus first on growth mindsets and follow up with problem-solving as the year progresses." Similarly, the first extended discussion of growth mindset occurred the very next day while the first extended discussion of problem-solving did not occur for another month. Furthermore, the growth mindset lessons were developed, reviewed, and piloted prior to the problem-solving lessons. In all documents that describe the innovation, growth mindset is listed before problem-solving. However, the apparent consensus among DIDT members that growth mindset should come first was immediately challenged by SIDT members, revealing differences in how members thought the two ideas interacted with each other. These different opinions about the relationship between growth mindset and problem-solving persisted through the final session in Phase 2 when one member described the relationship as "when students have a growth mindset, it can help them develop problem-solving skills," while another member argued for starting with problem-solving because "students need to experience some success that will show them they can accomplish something, helping to build a growth mindset."

Complexity of the Innovation

The second design feature, complexity, focuses on the level of abstraction and technical difficulty of the innovation. As noted in the prior section, the innovation remained abstract for a substantial period of time and the design team struggled in moving from abstract ideas to concrete implementable practices. This difficulty in achieving a necessary degree of concreteness was a challenge throughout both phases, but particularly in Phase 1 when the focus was on a district-wide innovation. At the end of Phase 1, even after deciding to prioritize growth mindset and problem-solving, DIDT members debated whether the focus should be on "changing hearts

and minds" or "focusing on concrete practices" and also whether the problem-solving practices would focus on core-content problems, school-based problems, or socio-emotional problems. Members' comments indicated there was no resolution to these disagreements and that members appeared to have different understandings of what the innovation was. One member wrote in a feedback form that she felt "very scattered, confused, divergent," and that she needed more "convergent exercises in which we agree on some specifics." Another member said "I think we have the shell or the template, [but] I think we hit an impasse when it came down to, what is it exactly that we want to do?" Similarly, throughout Phase 2, DIDT/SIDT members expressed concerns that the language used to describe the non-negotiables was not specific enough and a common sentiment was "If we're going to have high expectations and we're going to put in supports, we all need to know what [the non-negotiables] are and what they look like."

The abstraction of the emerging design created challenges in keeping members engaged in the design process. When the design involved multiple abstractions that were not easily understood or how they were related were not made clear, it was difficult for the DIDT/SIDT members to understand and to make sense of how each design activity fit into the overall process. For example, during an early activity in Phase 2, even though SIDT members had deep engagement with the abstract concepts during an activity, they did not make explicit connections that would lead to decisions about the innovation. Likewise, across several sessions, DIDT/SIDT members expressed concerns that the purpose of the activity was not always clear. This frustration around concreteness was not experienced equally among the three schools. Walker consistently lagged behind the other two schools in regards to their understanding of the innovation, the continuous improvement process, the level of specificity of the innovation, and implementation, and the readiness to scale in the innovation.

Implementation Support

This design factor emphasizes what implementation supports are provided. The findings indicate that researchers and facilitator provided extensive supports to SIDT members through monthly sessions, regular check-in calls, support creating and refining a substantial amount of the project materials, and support during common planning time with their school team. The frequency and depth of this support seemed to have enabled the SIDTs to turn the abstract ideas into concrete actions for their school. At the same time, with this support being provided individually to schools, the process of moving from abstract ideas to concrete plans were school-specific, and thus leading away from district-wide consensus around practices.

The researchers, facilitators, and at-large DIDT members provided expertise to the SIDTs on both the design challenge and the emerging innovation. One of the most important documents in Phase 2 that was distributed was the implementation plan document, a concrete document explaining the stages of implementation and the details in each stage. When introducing it, a facilitator said, "[drill] down to the details of the time, people, and resources you will need for implementation. Think about the requests you'll make to your principal and/or school administrators. This document should help lay out the plan." An example of how this document was used comes from Session 12, when the facilitators distributed reading materials, explained why each school must have a communication plan and a professional learning community (PLC), and gave them time to discuss how they would formalize the implementation plan into their work. As the year started, researchers and facilitators worked with SIDTs from each school to formalize structures and to provide guidance around the goals of PLCs and the

roles of the SIDTs to establish and maintain the PLCs. In particular, the facilitators visited the

schools regularly to help the SIDTs maintain the communication plan.

Researchers, facilitators, and at-large DIDT members also supported SIDTs by providing

an external voice to remind them of the bigger picture. For instance, after the Wheatley SIDT

developed a disciplinary form that would eventually be adapted and used in all three schools,

there was a tense discussion as two SIDT members from the school disagreed about logistical

details. It was an at-large DIDT member who spoke up and reminded them about how this fit

into the bigger picture:

> I don't want to lose sight of the fact that this form is just a way to help teachers be
> effective in implementing the bigger innovation of SOAR. The form isn't the end-
> all. We know that it won't work for all students or teachers, but it is an attempt to
> help give feedback to students and empower teachers to have the ability to get to
> the root of minor or mid-level infractions.

Our analysis also showed that the integration of researchers into whole group and school-

based groups helped to clarify number of issues for the participants and gave the SIDT members

opportunities to make sense of their work in broader context of the project. For instance, when an

SIDT member was concerned with how SOAR elements align with district policies, the

researchers clarified how the non-negotiable elements lined up with some of the district's goals

and initiatives. In another example, the researchers played an integral role in presenting the

continuous improvement process and helping the SIDTs develop a concrete plan. Two

researchers gave a presentation on how to choose an objective for a Plan-Do-Study-Act cycle

(PDSA, a continuous improvement tool), how to measure outcomes from that cycle, and how to

think of measures and indicators. Then, each of the researchers worked with a specific school to

give feedback as they planned specific components of the innovation that they would test in their

school. While this school-based support from the research team helped the SIDTs achieve greater

concreteness in their planned practices, with each school planning separately, there was fewer common elements in the innovation across schools.

Innovation Engagement

A final design factor is the process by which the innovation engages practitioners. The findings illustrate how the design process engaged DIDT/SIDT members, how it fostered substantial collaboration, how SIDT members focused on building buy-in at their campuses, how the innovation met school needs, and how members perceived the effectiveness of the innovation.

As noted in the description of the design process, the work was designed so that teachers, and to a lesser extent, administrators, in the innovation schools were part of making decisions about the innovation. Indeed, the data provide evidence that school-level practitioners had considerable involvement in making key decisions about the innovation and were generally engaged in the design process. In Phase 1, most activities elicited consistently high levels of engagement and, by the final session, members were so engaged that they recommended changes to the planned agenda to ensure it met their needs. Lower engagement, however, was seen in activities that were perceived to be less relevant to their work in the district or when the goals of an activity were not clear. For example, in the third session, members were asked to read about project-based learning as a potential component of the innovation. Early in the discussion, the group decided that the district curriculum framework was not aligned with project-based learning and so they disengaged. In Phase 2, there were clear patterns of engagement across schools, with Wheatley and Cervantes having higher engagement while members of Walker often disengaged.

Perhaps most important for how the design process engaged the DIDT/SIDT members is the emphasis on collaboration and consensus as central to the process. The design process was characterized by a large degree of collaboration among members that was intentionally scaffolded by the facilitators. For example, in Phase 1, the facilitators repeatedly emphasized that "we are one district-team," and members were reminded that they were designing something for the district and not just their campus. In nearly every session in Phase 1, DIDT members interacted in cross-functional and cross-school groups, which showed a deliberate effort to build small-group collaboration in a cross-school fashion. The facilitators also created an environment where members felt comfortable sharing their perspectives and voicing their concerns. For example, Phase 1 ended with a consensus process by which all ideas included in the innovation had to be approved by consensus. Ideas that did not have consensus approval were revised until consensus was possible. Their success in establishing a collaborative environment is affirmed by a DIDT member who noted, "I think that the presenters have done a good job of making sure that you leave your hat and your title at the door, and everybody is an equal contributing member." Collaboration in Phase 2 occurred mostly within schools as SIDTs worked on plans for their school, but still involved substantial input from the SIDT members. SIDT members were thus the major decision-makers about the specific practices around the innovation in their school. Two SIDT teams, Wheatley and Cervantes, worked productively for the most part, while Walker faced continuing challenges due to lack of agreement about what the innovation should entail in their school.

There was also a continual focus among SIDT/DIDT members about the need to build buy-in among the faculty at their school. With the SIDTs in place, facilitators encouraged schools to identify early adopters who would be the next set of teachers asked to test out

practices. In the latter part of Phase 2, much of the development work was structured around

PDSA cycles and schools used these cycles as an opportunity to engage other teachers in the

school. For example, the Wheatley team wanted to recruit widely for early adopters and used this

as an "opportunity for any teachers who wanted to be more involved in the school." The

Cervantes team sought feedback on their ideas for the innovation from their entire faculty. There

was a distinct lack of such specific actions to build local support by the Walker team.

Another way teachers and administrators can be engaged with the innovation is through

an innovation design suited to meet their needs. In both phases, there was a significant amount of

attention focused on needs of the schools, including the students and teachers in the schools. In

Phase 1, activities in almost every session were specifically oriented around identifying needs of

students and teachers around student ownership, such as data collection activities where DIDT

members designed and gathered stakeholder survey data from students, teachers, and

administrators around how students take ownership of their learning and barriers to further

student ownership. With each activity, the DIDT revised a set of "needs statements" that were to

be central to their design, ultimately deciding that the key need was "a significant number of

high school students do not attain the cognitive skills, life skills, and habits of mind that are

necessary for academic success." Despite this sustained attention to needs analysis, connections

between the identified needs and the emerging innovation were not always clear. For example,

when key decisions about the innovation were made near the end of Phase 1, DIDT members did

not reference the needs statements to help make decisions. Further, when engaged in a needs

analysis activity, the discussion focused more on what the data were saying rather than

implications for the design. The most specific statement about the implications of the student

survey data for the design was that "kids are confused about what they need to succeed; teachers

need to figure this out and create a systematic procedure for teaching students." The most specific statement of implications for the design from the administrator survey data was the "need for commonality in terms." The discussions during needs-analysis activities, then, highlight how members moved from concrete statements about needs to abstract implications for design, and losing concreteness in the process.

Convincing teachers and administrators of the effectiveness of the innovation is yet another way to engage them in the work. Throughout both phases, members expressed a substantial amount of support for the goals of the innovation and thought the innovation would meet its goals. At the end of Phase 1, about 90% of DIDT members agreed to strongly agreed that the innovation would increase student ownership in the innovation schools. Qualitative data supports this data. For example, one DIDT member said, "I have always believed that you teach more than academic skills to students," and another said they were "moving towards something powerful." Still, members also thought there needed to be more details around implementation and that the design process was frustrating because it "felt like we were talking in circles" when they needed more specificity. Phase 2 also had evidence of generally positive attitudes, particularly from the DIDT members who participated in both phases. Moreover, two schools had overall positive perceptions of the innovation, while the third had a number of disagreements. For example, midway through Phase 2, the SIDTs from Wheatley and Cervantes were positive and engaged, while the SIDTs from Walker had "negative attitudes as they were unsure how to approach the prototype." Similarly, near the end of Phase 2, one member at Wheatley expressed real excitement about their work, calling it a "transformative model" for their school. Yet in the final session of Phase 2, a Walker member said what they had developed "were just little tools" and had several negative comments about the work.

Cross-Cutting Themes

Looking across how the design process established in this district dealt with the four design factors, two overall themes emerged: a tension in maintaining consensus while trying to achieve the necessary concreteness in the design and how pre-existing school conditions influenced a school's ability to resolve that tension.

Tension between Concreteness and Consensus. These findings point to the successes in engaging DIDT/SIDT members in ways that built commitment and perceived effectiveness of the innovation. At the same time, the process appeared to limit SIDTs' ability to adequately achieve other design needs—such as the appropriate level of concreteness and the identification of necessary implementation supports. For example, while members generally felt positive about the innovation, a substantial number thought there needed to be more details about implementation. When asked about whether the innovation met the needs of the innovation schools, one DIDT member described how the facilitators appeared to intentionally keep the discussion at a more abstract level:

> Then we have problem-solving which is just sort of a brutally wide area.... There's a line between prototype and implementation. There's this, okay, we're, like we'll be having a conversation, and we'll be directed to stop the conversation because we're getting too far into implementation.

This member, like others, noted the lack of concreteness of the innovation suggesting that while members agreed with the emerging design, they were agreeing to a rather vague statement about what the work in schools would actually entail. This concern was also noted in feedback forms,

with members saying they are "frustrated by prioritizing broad needs over specific aspects" and disagreeing about how some of their ideas were combined with others. Members expressed that combining different ideas under a broader idea lost what they felt was key. This also occurred during the consensus process at the end of Phase 1, when key decisions about the innovation were made. During this process, points of disagreement were described as the "how" to be decided later, and the "what" they were currently focused on was broadened in order to obtain that member's agreement. This strategy was usually successful in achieving consensus as the member(s) with the concern no longer blocked the consensus. Still, despite concerns among members for more concreteness, the methods of obtaining that concreteness created frustrations around collaboration. For example, members were frustrated that many details were decided by small working groups rather than the whole team and felt that they "missed out" on some of the design process.

An activity at the end of Phase 1 highlighted the tension between concreteness and consensus as members openly disagreed with each other in an attempt to clarify the relationship between problem-solving and goal-setting, which at that point was under consideration as a major component of the innovation. With very broad components of the innovation emerging from the prior session, this session began with DIDT members feeling overwhelmed and concerned about the feasibility and lack of clarity in the innovation and disagreement about specific components. Facing this challenge, the facilitators moved to narrow the scope by prioritizing entire components over others rather than more tightly specifying all the components. Ultimately, the DIDT had a contentious discussion and majority vote to drop two of the four components of the innovation (goal-setting and self-monitoring), to focus on growth mindset and problem-solving. Perhaps because of the fairly broad nature of the ideas outlined in

the innovation, even with it being narrowed only to two components, DIDT members had substantially different perspectives and understandings about what these ideas meant. The feedback forms reflected this lack of resolution about the innovation, with members writing that their biggest concern was the need for concreteness. This concern was also reflected in the interviews with SIDT members. For example, one member said "I think we have the shell or the template ...I think we hit an impasse when it came down to, what is it exactly that we want to do?" While reaching for concreteness and specificity, they could not reach consensus and ultimately had a contentious vote that left some members feeling alienated.

One key principle of our improvement process is a common innovation for the district that allows for school adaptation. However, applying that principle in practice was challenging as there was considerable disagreement on the appropriate specificity for what is common and what can be adapted. Some members wanted a larger grain size to allow for more school-level adaptation. Others proposed that both the main skills and sub-skills that were the focus of the innovation be common. One member in particular continued to push back on a larger grain size, expressing concern that "if it is vague or not immediately classroom ready, the SIDT at different schools will struggle to get these specific pieces in place."

This challenge of the appropriate grain size, coupled with the broad nature of the innovation that emerged from Phase 1, continued in Phase 2. However, with the introduction of the school-based SIDTs, the district-team focused on "sharing ideas" between schools rather than a common innovation that is adapted to schools. For example, in Session 2, the stated rationale for bringing the schools together was to "share and learn." Likewise, in Session 8, cross-school groups were used for brainstorming while the meeting transitioned to school-based groups for decision-making. Notably, the main change idea that was developed centrally by the facilitators

and meant to be common across schools, a set of lessons and teacher professional development

on growth mindset and problem-solving, was met with mixed reactions from the SIDTs. This

again illustrates the tension between concreteness and consensus as the lessons developed by the

facilitators provided much needed concreteness to their work that was welcomed by some

participants. Yet other members were frustrated that they did not develop the lessons themselves.

Role of Existing School Context and Capacity. The ability of schools to develop

concrete practices for implementation in a collaborative process was greatly related to pre-

existing conditions in each school, such as prior experience with teacher-led initiatives and a

strong culture of trust and support. These pre-existing conditions facilitated or impeded the

school members in moving from the abstract to the concrete while negotiating with each other to

reach consensus. At Wheatley, the SIDT members were part of a school-wide teacher-led

initiative prior to the innovation. Many of them had leadership roles in the initial process of

gathering information to implementation and subsequent support. At Cervantes, there was an

established culture of trust and support among the faculty and administration, particularly those

on the SIDT. During both phases, the school administration had been very supportive of the

SIDT's work. In contrast, there was a lack of prior experience and a limited culture of trust and

support at Walker. Additionally, there was also a lack of leadership on the Walker team. As a

result, there was often a lack of consensus from the Walker team and it was difficult for them to

agree on a plan of action and develop concrete practices.

There were multiple instances where the researchers expressed their concern regarding

the gap between Walker and the other two teams. This gap was noticeable in regards to their

understanding of the innovation, the goals of PDSA, the readiness to scale in the innovation, and

the lack of a clear leader. When PDSA was introduced in Phase 2, SIDT members at Wheatley and Cervantes discussed the details of what PDSA might look like at their school, what the aim of the first cycle might be, or how early adopters would be incorporated. Wheatley, for example, discussed how introducing growth mindset, problem-solving, and bringing back the reading technique from the previous innovation as separate practices would be too much for students to handle. Another member then came up with the idea of using the reading technique on a growth mindset-oriented article about how the brain works. During this time, the Cervantes team identified teachers who they would ask to be the early adopters of the SOAR innovation and for them to try out the introductory lessons before the end of the year. The Walker team, on the other hand, struggled to stay on topic and did not get to the same level of concreteness as the other two groups. At the end of Phase 2, one SIDT member from Walker disagreed so strongly that she removed herself from the discussion. Moreover, even though Walker's SIDT wanted to implement school-wide lessons in homeroom at the beginning of the year, they had not piloted any of the lessons, and they had not even seen the lessons that another member of their SIDT had developed.

In contrast, Wheatley's SIDT had a professional development plan and outlined roles for how they would support each other during the lesson development. They had also finalized their plan to incorporate their reading technique with growth mindset to begin the next school year. At Cervantes, the SIDT members had gathered feedback from their faculty about what they thought their students needed to be have ownership and responsibility of their learning and incorporated the feedback when they created a sequence of lessons for each content area. With the support of the administration, they were able to secure time and resources for the faculty to come to a retreat to develop the lessons as a group before school started.

Conclusion and Discussion

This case study of a collaborative design process highlighted how a collaborative process fostered high engagement as researchers and practitioners co-constructed the innovation. Despite this collaborative engagement in design and development, the team struggled to define the non-negotiables in sufficient detail to allow for implementation planning. There appeared to be a tension between achieving the necessary concreteness or specificity in the design and a process that valued collaboration and consensus. Without specificity in the language and enactment of the innovation, members could reach consensus, but this resulted in agreement on vague statements that lack the appropriate specificity needed for implementation. While exploring the subsequent implementation of the innovation is beyond the scope of this paper, prior research would suggest that this abstraction in the innovation's core design emphasis will create challenges for implementation (Shiffman et al. 2008). With less concrete and more abstract guidance for implementers, both teachers and administrators are likely to struggle to understand what is expected of them and thus little change in actual practice (Rowan et al. 2009; Sanders 2014). Despite adopting this approach to build buy-in, the result may lessen buy-in as implementers experience frustration (Nunnery et al. 1997). Our findings suggest teachers want input into the process but don't want ambiguity about what they are doing. Developing an innovation design that allows local input and adaptation to context without burdening educators with even more demands is a delicate balance.

Because the innovation design remained at a broad level, there was significant room for design team members to make their own sense of the innovation. When individuals are confronted with unfamiliar ideas, they engage in sensemaking to integrate new ideas with

existing understandings, which in turn influences their willingness to implement and adhere to programs with fidelity (Coburn 2006). With little to guide that sensemaking process, it is likely that members attached the ideas to their own various existing practices (Spillane et al. 2002). Changing practice in ways intended by a particular reform requires specificity in design to provide clear guidance of implementation at all levels (Desimone 2002; Supovitz 2008). Districts can play a key role in shaping the sensemaking process in schools by establishing clear expectations for enacting the reform and how the reform fits in a coherent organizational context (Sanders 2014; Supovitz 2008). Organizational learning across levels in a district can be embedded and supported when there are specific tools or routines that can serve to reify the knowledge gained, enact it in practice, and allow members to see the continuity and progression of the work (Knapp 2008; Louis 2008; Stein and Coburn 2008). Without such specific tools or practices, it was difficult for the members to build and deepen their learning from session to session.

Moreover, as in other reforms taken to scale, decisions made in regards to one design feature had implications for how the others were enacted (Shiffman et al. 2008). The process of deciding on the central features of the innovation (design emphasis) while maximizing collaboration and involvement of local stakeholders (innovation engagement) also contributed to the abstractness (complexity). There seemed to be a direct tradeoff between fostering engagement within the school and concreteness of practices across schools. Indeed, these findings reinforce the idea that design is not just about a discrete practice but is a puzzle that encompasses relationships with the schools and the infrastructure built to support the work (Cohen et al. 2013). This implies that successful design must proceed with implementation in mind—innovation development cannot be separated from implementation concerns. When the

design did not reach desired levels of specificity, there were unanswered questions of next steps that led to anxiety among members as implementation approached. This idea of reform design as a puzzle involving design, implementation, local context, capacity, and infrastructure suggests there are both opportunities and challenges in the increased attention to partnership-based approaches to reform such as design-based implementation research and improvement science. For example, design-based implementation research is distinguished by its attention to both the reform design itself and to the process of implementation (Fishman et al. 2013). At the same time, engaging in improvement science requires practitioners to adopt radically new ways of selecting and implementing reforms (Bryk et al. 2015). Practitioners not only need expertise in the technical aspects of the reform necessary for implementation, but also expertise in design and development, space for such work to take place, and latitude to fail in a safe environment.

Lewis (2015) describes this interconnection between the innovation and its implementation in context as recognizing that the knowledge required for success resides in both the people (i.e., local implementers) and the program (i.e., the innovation). Yet our finding that pre-existing school-level conditions appeared to strongly influence innovation development and implementation raises concerns for engaging in this type of partnership work in contexts that may lack such expertise in designing and leading reform (Durlak and Dupre 2007). Partnership-based models of improvement, with their reliance on local expertise and engagement, must grapple with a critical paradox of school improvement: it takes capacity to build capacity (Cohen et al. 2013; Hatch and White 2002). Improvement efforts that intentionally build in substantial local adaptation require capacities such as time, expertise, and collaborative ability to engage in the development work that teachers may not have, particularly since improvement efforts are often focused on schools with limited existing capacity (Berends et al. 2002; Datnow et al.

1998). Indeed, the realization of policy in practice depends on the fit between the capabilities of those that support implementation and the ambitions of the policy (Cohen et al. 2007). Finding this balance between establishing concreteness and fostering collaboration and consensus while taking into account pre-existing local conditions is a key challenge in school improvement.

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Tables

Table 1 – Descriptive Information on Innovation Schools

	Wheatley	Cervantes	Walker
Enrollment	>1500	700-1200	>1500
Student race/ethnicity			
Hispanic	40-60%	>80%	>80%
African American	20-40%	<20%	<20%
White	20-40%	<20%	<20%
Percent economically disadvantaged	40-60%	>80%	>80%
Recent reform history	Teacher leadership team successfully designed and implemented a school-wide literacy initiative; New principal appointed at the start of Phase 2	School-wide literacy initiative was successfully implemented; New principal appointed at the start of Phase 1	Target of school turnaround efforts a few years prior to participating in this work; New principal appointed at the start of Phase 1
DIDT representatives	Two teachers selected by the principal who were members of the existing teacher leadership team	One teacher who was identified as a leader during the literacy initiative implementation; One teacher whose subject assignment was considered relevant for SOAR; both selected by principal	One non-classroom teacher selected by principal to minimize instructional disruption; two classroom teachers selected by principal at facilitator encouragement to appoint additional personnel
SIDT composition	Six teachers, most of whom were members of the existing teacher leadership team and one assistant principal; recruited by DIDT representatives	Six teachers recruited by DIDT representatives because of perceived interest as early adopters	Eight department chairs selected by principal due to their role on school leadership team

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

Table 2 – Amount and Type of Data Collected in Each Phase

	Phase 1 - DIDT	Phase 2 – DIDT/SIDT
Audio files	108 hours	66 hours
Fieldnote logs	18	24
Artifacts distributed or produced during meetings	320	236
Minutes from meetings of key project personnel	25	32
Researcher reflection forms	6	6
Feedback forms completed by participants	6 sets	7 sets
Interview transcripts	21	23

Table 3 – Coding Framework for Capacity Building and Innovation Design

Attitudes and engagement	- Attendance - Attitudes - Engagement
Delivery of Learning for Design and Implementation	- Learning about design challenge - Learning about design process - Learning about implementation and scale - Learning about continuous improvement*
Participant Understanding of Design and Implementation	- Understanding of design challenge - Understanding of design process - Understanding of implementation and scale - Understanding of continuous improvement*
Design Process	- Collaborative - Openness to new ideas - Needs-centered - Grounded in design challenge - Alignment with existing system components - Iterating on the design* - Piloting and PDSA*
Design Concept Itself	- Incorporation of design challenge core elements - Participants' perceptions of developed innovation
Understanding the Process	- Centrality of the capacity building framework - Emphasis of the DIDT as a district-wide structure - Integration of research team - Focus on relationship building with schools - Points of significant concern - Significant decision points

*These elements were added in Phase 2.