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Designing Innovations for Implementation at Scale: An Emerging Framework for Increasing System Capacity

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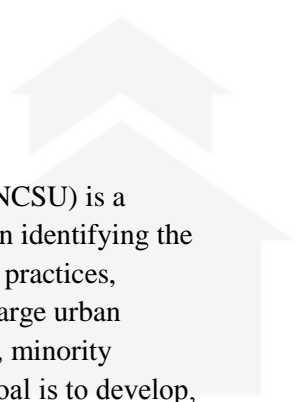
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The National Center on Scaling Up Effective Schools (NCSU) is a national research and development center that focuses on identifying the combination of essential components and the programs, practices, processes and policies that make some high schools in large urban districts particularly effective with low income students, minority students, and English language learners. The Center's goal is to develop, implement, and test new processes that other districts will be able to use to scale up effective practices within the context of their own goals and unique circumstances. Led by Vanderbilt University's Peabody College, our partners include The University of North Carolina at Chapel Hill, Florida State University, the University of Wisconsin-Madison, Georgia State University, and the Education Development Center.

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Introduction

With the growing emphasis on rigorous methods for learning what works in education, researchers and practitioners are being called on to consider what occurs when transferring an effective practice from smaller to larger, more complex contexts (Schneider, B. and McDonald, S. K, 2007).

This paper provides an opportunity for EDC developers to share some of the lessons learned from their work to implement, scale, and sustain effective practices in classrooms, schools, and districts across the United States and internationally. It highlights several reresentative case illustrations of implementation and scale-up in different contexts and describes approaches that seemed to work. Finally, the paper describes the common elements that emerged across the cases that suggest a potential framework of core elements, that when taken together as part of an intentional process, may increase the likelihood that schools and districts will be able to implement effective practices at scale.

For the purposes of this discussion, we are defining *implementation* as the enactment of an effective practice or set of practices following a planned course of action. The use of the term *scale* here refers to the increase in the number of users who are able to implement an effective practice with integrity. Finally, we use the term *sustainable* to describe practices that are expected to be maintained over time as an essential condition of system success.

Case Illustrations

Our preliminary analysis of cases suggests five common elements that when taken together, seemed to support system efforts to increase capacity for implementing desired change at scale. Four of those cases are included here to provide examples of effective implementation at different levels of scale (Dede, C., Honan, J., & Peters. L, 2005). A discussion of the collective lessons learned follows the four cases.

Case #1: Building Community-Wide Ownership and Commitment for Diversity

Our first case illustrates the importance of building ownership and commitment when attempting to implement and scale-up a practice system-wide. It begins with an urban school district's decision to make diversity a district priority. They decided to host a conference for the purposes of launching this initiative and asked EDC to assist with planning, organization, and facilitation based on its long and highly regarded history of effective work in this area.

The conference included a diverse group of representatives from across the district and was designed to encourage participants to reflect on their own beliefs and attitudes about different groups of students; to examine student data related to academic performance and social behavior; and, to launch the development of school-based plans to address diversity and equity issues across the system.

The conference was successful in accomplishing the district's initial goals. As a result, the district invited EDC developers to continue working with them to develop and implement a system-wide diversity

initiative. The School Board passed a resolution that outlined the focus of the initiative over three years. EDC developers worked with a planning committee composed of school and district personnel, teacher union representatives, and community organizations, including law enforcement who provided educational programs for students while special events were taking place.

It was clear from the onset that the district would need to build system-wide capacity in order to accomplish initiative goals. A second working conference for each of the school zones was held. Represented was a cluster of elementary, middle, and high school participants. As part of this work, EDC developers produced a training manual and trained community-based partners and in-school facilitators to support and sustain the work. Various stakeholders played key roles in bringing this initiative to scale, including the Superintendent, School Board members, and EDC developers. In addition, community members facilitated small group work. School teams had an opportunity to create a shared mission for diversity and a plan for implementation.

Another example of the kinds of challenges you can anticipate when trying to implement change at the system-wide level is the following. Just before the second event, the teacher's union voted to impose a "work to rule" order because contract negotiations had reached an impasse. They let their members know that while they were allowed to attend the event, they were not required to actively participate in the activities. Initially, a number of union members sat at the back of the room as observers, however, they were quickly drawn in by the level of active engagement among other participants and eventually joined discussions and participated in the planned activities.

Over the course of the next three years, diversity training and sharing took place in schools, and a Community Day of Discussion was held annually as part of the district's plan. After the three-year initiative, diversity programs continued in different forms at the school level. The diversity initiative had far-reaching impact on people's attitudes and understandings of diversity and how they impacted students' experiences in school.

Case #2: Frameworks Matter When Implementing and Scaling Reforms with Integrity

The next case demonstrates EDC expertise in using curriculum reform as a powerful lever for capacity building and broader system change. The case includes two separate scenarios in which a process for curriculum development and implementation for the same program is implemented differently in two different school districts. We think the two scenarios illustrate how different approaches to implementation can dramatically impact intended outcomes. While the curriculum development and early implementation processes were similar for both programs, this case describes lessons learned about the critical need for an organizing framework to guide implementation, scale-up, and sustainability.

It is important to point out that in both *Scenario A* and *Scenario B* the curriculum was more than a set of units, lessons, documents, tools and resources, and a scope and sequence. Rather, the curriculum embodied *approaches to teaching and learning* that were intended to impact school structures and cultures. Implementation with fidelity required schools to transform their existing structures and practices to include support for ongoing reflection and development of teacher practice. It called for changes in teacher planning and faculty collaboration as well as support for classroom performance assessments and professional development tied to inquiry and project-based teaching. Intentional structures linking classroom learning to work-based applications, and other practices specific to each school's context, were

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also critical areas of focus during the implementation process.

We piloted the curriculum in a diverse range of classrooms and schools and collected ongoing feedback from students and teachers using surveys, interviews, and classroom observations. Varying types of adaptations based on local context were documented during piloting, which informed the creation of *Guidelines for Curriculum Implementation*. We hosted a professional development institute with a cohort of teachers and the materials were revised based on teacher feedback. We developed facilitator guides for professional development providers and identified potential teacher leaders or professional development providers, who played roles at the second institute.

Scenario A

This curriculum initiative was part of a broader high school reform effort being implemented in five districts within one state. Schools and districts received funding and technical assistance support for two years from a partner organization. The initiative focused on supporting *pathways* or career academies to prepare students for postsecondary education and careers, and connect academics to real-world applications. Schools and districts were required to adhere to the guiding principles stipulated in a *Pathway Certification Rubric,* which articulated the principles guiding the initiative. As part of the certification process, schools and districts were expected to have engaging and rigorous curriculum that was aligned to both academic and Career and Technical Education (CTE) standards. After piloting, the curriculum continued to be implemented in *some* classrooms.

An intended outcome was that deeper use and implementation of the curriculum would spread to more sites in the *next* phase of the project. While initial evaluation data revealed that the curriculum was having a positive impact on students and teachers (e.g., administrators, the state Board of Education, and professionals in key career fields praised it), deeper implementation and sustainability plans did not coincide with other initiative priorities and funding capacity.

For example, budgetary cuts and other factors resulted in high staff turnover and changes in school administration in schools that had been implementing the curriculum. Meanwhile, district coaches (hired by the lead partner organization) focused their efforts on helping schools and districts achieve pathway certification status. Pathway coaches, on the other hand, focused their work on training school teams to work together to develop multidisciplinary integrated units across academic and CTE subjects. While the work of these two coaches was intended to support sustainability of the initiative, *improvements efforts between partner organizations were not all aligned*, resulting in different intended outcomes.

In this illustration, EDC developers and professional development/technical assistance providers played a minimal role in the larger initiative (except to attend conferences), and our recommendations for strengthening the professional development around instructional practices were not addressed, partly because the initiative involved a different partner organization with conflicting priorities for different phases of the initiative. In the next scenario, we describe a similar challenge in a different context.

Scenario B

In this example, Pathways to Postsecondary Education and Careers was also the focus of the curriculum development and implementation initiative. While the curriculum products developed were similar, the implementation strategy was considerably different. It is here that our important lessons were learned.

The difference in implementation with Scenario B, we think, rests in the district's efforts to develop shared expectations and focus for their work across multiple stakeholders (i.e., schools, districts, and communities) responsible for deep implementation, scale, and sustainability. The common framework for the initiative focused on the following three strands that guided all implementation activities:

1.   *Transforming Teaching and Learning*: Creating meaningful learning experiences that enable students to apply academic knowledge to real-world challenges.

2.   *Redesigning High Schools*: Creating and maintaining the career- and interest-based programs and the collaborative culture, structures, and practices necessary to transform teaching and learning and facilitate community engagement.

3.   *Sustaining Change Through Business and Civic Leadership*: Engaging employers, educators, and community leaders to collaborate in promoting and sustaining educational programs that prepare the future workforce.

Schools and districts interested in adopting the curriculum were encouraged to use the three-strand framework as a guide for their work. This district recognized that the three strands were essential in order to ensure consistent curricular and instructional change system-wide. This district also placed professional development high on their list of priorities. Training included project-based learning and other instructional approaches that were intentionally embedded in the curriculum and teaching and learning pillars (design principles). As a result of this shared focus, various schools and districts have been able to adopt and implement the curriculum with fidelity. One district, in particular, took additional steps to disseminate the teaching and learning pillars of the curriculum and the accompanying professional development model district-wide. Concurrently, the district used the framework to assist in efforts to align business and community organizations and resources so that their coordinated support of public schools would contribute to the success of the community as a whole.

EDC developers continue to train teachers and administrators throughout the district, as well as community and business leaders, in the curriculum's approach to teaching and learning. Many schools are offering parts of the curriculum to students in career academies established in every high school across the district. While challenges in implementation and scale-up do still exist, lead educators and district personnel have described this improvement effort as not merely a curriculum, but a model that can contribute to changing school culture, structures, and overall approaches to building student achievement and teacher practice. They also recognized that changes needed to be made across the various levels of their educational and community system. As a result, EDC developers, as members of this program's national staff, have played a more significant role in curriculum implementation as well as other instructional improvement efforts in this district.

Case #3: Fostering Innovative Solutions to Substance Abuse Prevention

EDC has worked with community organizations across the country to develop innovative prevention programs and practices that respond to their unique needs in the area of substance abuse. Many of these community development programs lacked the capacity to prove their effectiveness.

In 2005, the Substance Abuse and Mental Health Services Administratoin (SAMHSA) contracted with EDC, among others, to launch the Service to Science (STS) initiative to work with local program EDC developers, implementers and evaluators to build their capacity to demonstrate and document their program's effectiveness. Support strategies include a combination of face-to-face trainings, customized technical assistance, and financial incentives to assist community organizations in building their evaluation capacity. Programs participate in regional training and technical assistance events and receive follow-up technical assistance tailored to meet their specific program evaluation needs. A key component of the STS initiative is matching programs with evaluation experts, who provide technical assistance on various topics such as program logic models, implementation fidelity instruments, evaluation design, instrument identification or development, among other topics. Over the past eight years, more than 500 programs have participated in Service to Science.

The following three programs represent important work that we have done to support capacity building by teaching clients how to use data to inform innovation design and implementation. The scale-up challenge for these programs is to collect data on their effectiveness in order to sustain funding and scale up effective practices in other communities.

Program A: I'm Allergic to Stupid Decisions (IA2SD)

IA2SD is a social marketing campaign developed by teens for teens to change attitudes and social norms related to underage drinking. The case is an illustration of innovative practices being designed by students in response to their own expressed needs and the need to collect effectiveness data prior to making further investments.

In this scenario, students designed and launched an innovative campaign to influence teen abstinence from alcohol. The campaign used various types of communication methods (i.e., text messaging, Twitter, Facebook) to transmit three types of messages to students: *excuses*, *facts*, and *choices.* In order to determine the effectiveness of these practices, we are supporting program efforts to collect data related to actual behavior change, using a comparison group. Evidence of effectiveness is an essential next step to ensuring the program's ability to scale up practices to other campuses.

Program B: Youth Action Research for Prevention (YARP)

This youth empowerment program is aimed at reducing and/or delaying the onset of drug and risky sexual behavior, and increasing individual and collective efficacy and educational expectations. The intervention brings youth from high-risk neighborhoods together in a small Northeastern city and trains them to conduct their own research as a way to better understand their community. They, in turn, use this research to inform various social action activities. The program uses participant observation, interviews, focus groups and materials produced by the participants themselves to assess strategy effectiveness. Results show that the program helped students strengthen their communication, analytic, and inquiry skills. In addition, they developed personal agency and embraced positive peer norms towards risky behavior.

Program C: Youth Violence Prevention Program

This is a strengths-based, culturally-focused preventive intervention for African American adolescents. The program uses a school-based adolescent curriculum as well as a parent curriculum to promote knowledge, attitudes, skills, confidence and motivation to minimize adolescents' involvement in risky

behaviors such as violence and substance use. An evaluation of the program found that in comparison with adolescents in a control group, adolescents who participated in the program reported fewer fighting and bullying behaviors, violent-related bystander behaviors, and fewer incidents of personal victimization. In 2012, the program was included in a National Registry of Evidence-based Programs and Practices, a federal registry of mental health and substance abuse prevention and treatment programs aimed at connecting communities to evidence-based practices.

This evidence suggests that developing capacity to collect, analyze, and use data as a way to understand and respond to a design challenge is a critical factor in capacity building efforts for the purpose of scaling up and sustaining effective practices.

Case #4: A Community-Based Approach to Standards-Based Reform: Large Scale Initiatives Require Complex Support Structures

This case represents another example of EDC developer experience and expertise in building ownership and commitment for complex system change at the school district level. The work involved organizing a 40-member Standards Board in a mid-size, chronically low performing school district that was, at the time, under state takeover. The Standards Board was appointed by the local school board and comprised of district educators, parents, and community members charged with responsibility for selecting and recommending rigorous content and student performance standards for all grades in all core subject areas as part of system-wide overhaul.

At the core of this systemic reform initiative was a technical writing team comprised of 120 teachers representing every school in the district. EDC provided facilitation to support the work of this writing team, which ensured the overall success of the initiative, as the writing team would become the knowledge and process keepers at the end of the funded portion of the project.

The initiative was funded by a philanthropic organization as part of a national reform agenda involving a total of seven school districts across the country. A team of well-known national experts and partners supported the local initiative over a two-year period of time. To build the district's capacity to lead the completion of the standards setting process, we helped to strengthen educator and community understanding of more rigorous demands for student learning outcomes. The process included the facilitation of teacher-led cross-content curriculum, instruction, and assessment design teams and included the development of tools, protocols, and measures for reviewing and recommending courses of action to the full board for full implementation and district-wide scale-up over time.

The process began with reviewing the standards and showing teachers how to backward map from the standards to design their own tasks that would culminate in a performance demonstrating mastery. The backward mapping process was facilitated as part of a series of weekly professional conversations with subject area writing teams, and in a workshop environment with guiding tools and session protocols. Members of the writing team then facilitated conversations in each of their schools for the purpose of collecting feedback and creating shared understanding and support for new learning expectations.

Collective Lessons Learned

Though each of the cases described here is different in both the content and the nature of the scale challenge, the common threads associated with implementation consistently identified the following five

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factors:

Lesson #1: Deep Knowledge and Understanding of the Design Challenge.

There was deep knowledge and understanding about the condition(s) to be changed that came from experience with the context, data, and content expertise related to the challenge.

Lesson #2: Ownership and Commitment to Process for Change. There was broad ownership and enduring commitment from stakeholders impacted by the change to engage in various methods of problem solving that would address the challenge.

Lesson #3: Innovative Solutions to Challenges.

New practices were designed or adopted in response to a particular challenge using a variety of structured problem solving techniques.

Lesson #4: Adaptation of Innovation to Context.

Cases illustrate the need to adapt a particular innovation to the particular implementation context. This included pilot implementation of the innovation in the intended context with on-going collection of implementation data from users that guided modifications and adjustments to the innovation being implemented.

Lesson #5: Support Infrastructures. Coherent infrastructures of support were in place that promoted alignment, collaboration, and two-way communication and feedback throughout the implementation process.

An Emerging Framework for Increasing System Capacity to Implement Effective Practices

Figure 1 below depicts the core elements of an emerging framework for increasing system capacity to implement, adapt to context, and scale-up effective practices based on lessons learned from these and similar cases.
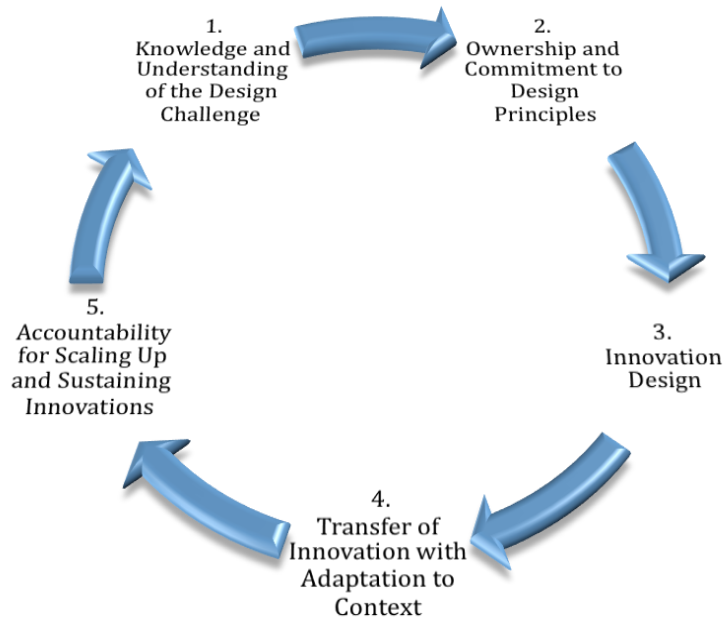
Figure 1: Framework for Building Capacity to Scale Up and Sustain Effective Practices

The next section discusses the process we envision for guiding the innovation design, adaptation, and initial implementation of effective practices identified in the year one research.

From Lessons Learned to Action

In the previous sections of this paper we discussed lessons learned from our experience with a range of challenges faced by schools and districts struggling to adapt and implement effective practices with fidelity at scale. The next section discusses the process EDC developers will use to guide the innovation design, adaptation to context, implementation, and scale-up of effective practices in NCSU districts, based on those lessons. It begins with a description of the design challenge that schools and districts will be asked to address. Our cases suggest that having a deep understanding of the design challenge is fundamental to developing an appropriate response. It requires that implementors have an complete understanding of the complexity of the undertaking and the five areas of concentration that are embedded in the design challenge that schools and districts will address.

The Design Challenge

Five areas of concentration define the scope of the design challenge that schools and districts will be asked to take on. It is important to understand the implications for implementation and scale-up embedded in each area. Further, we argue that it is critical that teams understand that the design challenge, as defined here, is significantly more complex than simply replicating a new practice in a different setting. The five areas of concentration are tightly connected and demand attention throughout the process.

Brief descriptions of each area are included here:

1. District and school teams must *develop a deep understanding of the effective practices to be implemented*. Teams will draw from the literature, findings from year one research in high value added (HVA) and low value added (LVA) high schools, and action research they conduct in the three innovation high schools.

2. Part two of the challenge asks teams to *design innovations that respond to triangulated findings* (from the research, literature, and innovation school contexts) using structured design protocols.

3. The third part of the challenge requires that teams adapt and refine innovation designs to their own school contexts.

4. School and district teams are asked to implement adapted designs with integrity in their high schools with a detailed plan for scaling-up design implementation beyond the initial point of implementation.

5. The fifth area of the design challenge requires school and district teams to design and implement integrated structures of support that can be sustained over time and that include mechanisms for collecting feedback on implementation progress.

As we mentioned earlier, responding to the design challenge demands that school and district teams attend to *all* five areas of concentration as part of their work. A carefully designed curriculum has been developed to guide this process and to ensure that there is capacity in each of the five areas of concentration. The curriculum framework is briefly described later in this paper.
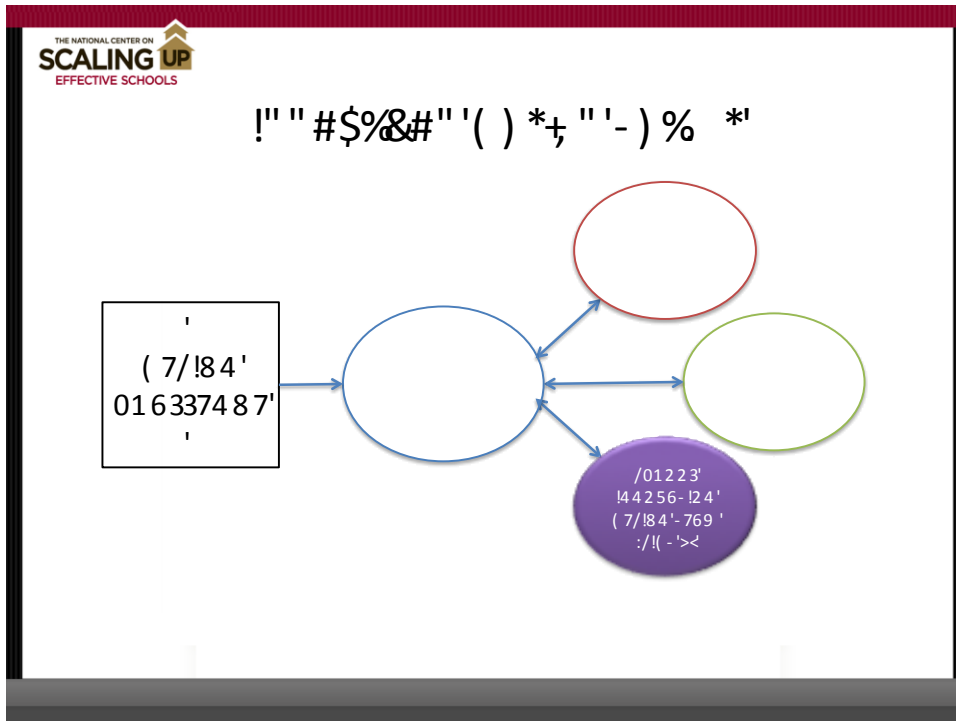

Figure 2: The Path of the Design Challenge

The above Figure 2 illustrates the path of the design challenge from the researchers to the the district design team, and from the district design team to the design teams in three selected innovation high schools. Our model is grounded in the iterative capacity building framework discussed earlier. A brief description of the district and school design teams follows.

District Innovation Design Teams

Innovation design teams are the "first responders" to the design challenge. Strategically focused at both the district and school levels, these two interdependent, cross-functional teams will serve as the leadership hub for all activities related to innovation design, adaptation to context, and implementation of innovations. They will be trained to assume leadership roles for scaling-up and sustaining the work beyond the life of the grant.

The District Innovation Design Team (DIDT) is the leadership team that is charged with leading the entire design/implementation effort for the district. Comprised of 18 members this team will include district level officials with responsibility for high school oversight, teachers and administrators from study high schools, teachers and administrators from selected innovation high schools, researchers from the year one research team, and EDC developers.

Through a structured process of learning and facilitation, the design teams will develop capacities to:

- Lead for change that is grounded in the context of the district and schools

- Bring together divergent perspectives that can contribute to a richer understanding of the innovation-for-transfer challenge and generate a broader range of potential solutions (i.e., both "continuous" and "discontinuous innovations)

- Facilitate ownership and buy-in from all constituencies, especially those who are most impacted by the challenge

- Employ human centered design methodologies that engage constituents in the generation of innovative solutions that are relevant to their context and sustainable over time

- Ensure timely access to resources to address both anticipated and unanticipated consequences that may arise during implementation and scaling-up activities

- Bridge worlds of research and practice through focused collaboration

- Facilitate two-way communication structures that support multiple and varied opportunities for meaningful participation and feedback

- Facilitate networks for sharing, learning and making appropriate revisions to designs and implementation plans

Members of the DIDT will be involved in each high school from the beginning. and will work with school-based SIDTs on an ongoing basis. They will operate as critical friends to assist in problem solving, monitoring progress, documenting and sharing lessons learned across networks, and maintaining lines of

communication and authority with existing structures in the schools and district.

The School Innovation Design Teams

Capacity building is further rooted in schools through School Innovation Design Teams (SIDT) in each of three innovation high schools. Working in close collaboration with the DIDT, each innovation school will form a team to take a primary role in the adaptation and implementation challenge phases. Each SIDT will be comprised of approximately 10 to 15 members. Each team will consist of representative groups of recognized teacher leaders and school administrators from the innovation school with the expectation of including teacher leaders across a range of teaching experience.   Criteria for selection to the school-based teams includes: evidence of leadership, through formal roles (i.e., department heads, subject area coaches, etc.) or through informal roles (i.e., committee chairs, opinion leaders, highly respected among peers, highly accomplished evaluation records, etc.). Two members of the SIDT will be selected to serve on the DIDT as part of the transfer of learning between district and school teams.

The SIDT will be responsible for providing school-based leadership for change that is grounded in the local context and taps into those who are most impacted by the change. The SIDT members will facilitate ownership and buy-in from key constituencies at the school level and share feedback, progress and lessons learned.

In collaboration with school and district leadership, SIDT members will ensure timely access to resources and will operate local communication channels to facilitate transparency of decision-making to enhance local ownership and buy-in of the implementation and scale-up work.

Curriculum Framework to Structure Design Team Learning

A curriculum framework that is tightly aligned with the five areas of concentration embedded in the design challenge serves as the guide for planning learning activities that support a capacity building framework. The curriculum framework defines the content, processes, and structures that will support for design district and school design team efforts to respond to the design challenge -- expanding upon the strengths and expertise that already exist. The curriculum framework is equally applicable to both district and school design teams.

A Two Part Learning Agenda

Figure 3 below illustrates the two distinct learning agendas that are embedded in the design team curricula. The left side of the diagram identifies the knowledge and skills needed in order for teams to effectively respond to the five areas of concentration embedded in the design challenge that we discussed earlier. The right side of the learning agenda addresses the knowledge and skills related the essential elements of effective high schools from the research with a concentrated focus on differentiated practices identified in HVA high schools.
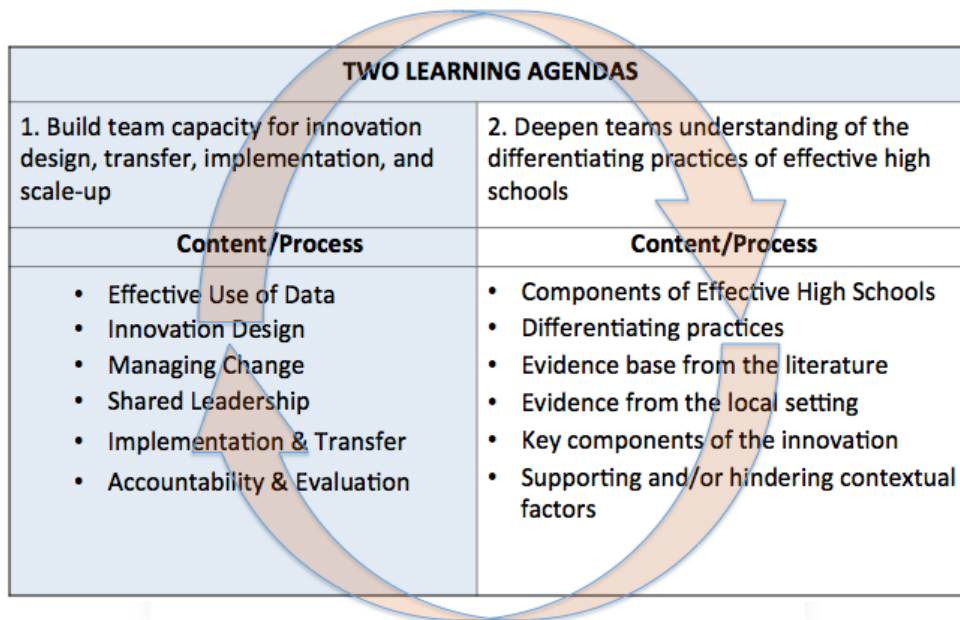
TWO LEARNING AGENDAS

1. Build team capacity for innovation design, transfer, implementation, and scale-up	2. Deepen teams understanding of the differentiating practices of effective high schools
Content/Process	**Content/Process**
• Effective Use of Data • Innovation Design • Managing Change • Shared Leadership • Implementation & Transfer • Accountability & Evaluation	• Components of Effective High Schools • Differentiating practices • Evidence base from the literature • Evidence from the local setting • Key components of the innovation • Supporting and/or hindering contextual factors

Figure 3: Content and Process Learning Agendas

Taken together, the two agendas are intended to define and guide design team learning activitiess and is tightly aligned to the design challenge -- from accepting and understanding the challenge, to developing innovative designs that address the challenge in a contextualized way, to transfer and implementation, and eventually to scale. Since content is experienced through a series of activities that build over time as the team does its work in meeting the design challenge, all activities integrate both learning agendas.

The scope and sequence of the design team work is organized into five phases: *Phase 1* as the start up phase, focuses on team organization and understanding all five aspects of the design challenge (using research, literature, and school data) efforts will focus on generating prototypes of effective practices found in HVA schools for consideration and selection by the three innovation high schools. *Phase 2* priorities address the piloting of selected designs in high schools for the purpose of modifying and adapting prototype designs to school contexts. *Phase 3* activities focus on full implementation of adapted designs in selected areas of the three innovation high schools. It is during this phase that rigorous documentation will also be conducted by researchers seeking to understand the implementation process in different contexts. Based on the learning from phase three, *Phase 4* will focus on scale-up the adapted innovations throughout the entire high school. *Phase 5* is designed to focus on scale-up to other district schools. This process is intended to be guided by district design teams using the processes and tools developed over the duration of the project.

Conclusions

An analysis of our collective lessons learned about implementation of effective practices at scale in different contexts leads us to conclude that there are certain core elements, that when taken together as part of an intentional process, can increase a system's capacity to implement effective practices at scale.

These lessons have influenced our emerging capacity building framework and the curricula we will use to guide the design innovation process with schools and districts. We expect that the framework will continue to evolve as we continue to learn more about implementation at scale from our work with them.

Selected References

Annenberg Institute. (1998). *Using data for school improvement: Report on the Second Practitioner's Conference for Annenberg Challenge Sites*. Houston, TX: Author.

Argote, L. (1999). Organizational learning: Creating, retaining and transferring knowledge. New York, NY: Kluwer.

Argyris, C. (2004). *Reflection and Beyond in Research on Organizational Learning*. Management Learning, 35(4), 507-509.

Ball, D. (1995). *Blurring the Boundaries of Research and Practice*. Remedial and Special Education, 16(6), 354-63.

Bernhardt, V. (2000). *Designing and using databases for school improvement*. Larchmont, NY: Eye on Education.

Bryk, A. S., P. B. Sebring, E. Allensworth, S. Luppescu and J. Q. Easton. (2010). *Organizing Schools for Improvement: Lessons from Chicago*. Chicago: University of Chicago Press.

Bryk A. S., Gomez L. M., Grunow A. (2010), Getting Ideas Into Action: Building Networked Improvement Communities in Education, Carnegie Foundation for the Advancement of Teaching, Stanford, CA, essay, retrieved from http://www.carnegiefoundation.org/spotlight/webinar-bryk-gomez-building-networkedimprovement- communities-in-education

Christensen, C. (1997). *The Innovator's Dilemma*. Boston: Harvard Business School Press.

Coburn, C. E. (2003). Rethinking scale: Moving beyond numbers to deep and lasting change. *Educational Researcher, 32*(6), 3-12.

Coburn, C. E. & Stein, M. K. (2006). Communities of practice theory and the role of teacher professional community in policy implementation. In M. Honig, (Ed.), *Confronting complexity: Defining the field of education policy implementation* (pp. 25-46). Albany: SUNY Press.

Cohen M. D. (1991) "Individual learning and organizational routine: Emerging connections". Organization Science, 2 (1) pp. 135-139.

Cox, J. (1996). *Your opinion, please! – How to build the best questionnaires in the field of education.* Thousand Oaks, CA: Corwin Press.

Darling-Hammond, L. (1996). *The right to learn and the advancement of teaching: Research, policy and practice for democratic education*. Educational Researcher, 25 (6), 5-17.

Dede, C., Honan, J., & Peters. L., (Eds). (2005). *Scaling Up Success: Lessons Learned from Technology-Based Educational Innovation.* New York: Jossey-Bass.
Design Thinking for Educators. (2011). Retrieved June 1, 2011 from http://www.ideo.com/work/toolkit-for-educators

Elmore, R. F. (1996). *Getting to scale with good educational practice*. Harvard Educational Review, 66 (1), 1-26.

Feldman, M. S., & Pentland, B. T. (2003). Reconceptualizing organizational routines as a source of flexibility and change. Administrative Science Quarterly, 48, 94–118.

Fisher, D., Frey, N. (2008). *Better Learning through Structured Teaching: A Framework for the* Gradual Release of Responsibility. Association for Supervision and Curriculum Development. Alexandria, VA.

Garmston, R. J, & Wellman, B. M. (1999). *The adaptive school: A sourcebook for developing collaborative groups*. Norwood, MA: Christopher-Gordon Publishers, Inc.

Gersten, R., Vaughn, S. Deshler, D., & Schiller, E. (1997). *What we know about using research findings: Implications for improving special education practice*. Journal of Learning Disabilities, 30, 466-476.

Gomez, L. M., K. Gomez, and B. R. Gifford. (2010). "Educational Innovation with Technology: A New Look at Scale and Opportunity to Learn." *Educational Reform: Transforming America's Education through Innovation and Technology*. Whistler, BC: Aspen Institute Congressional Conference Program Papers.

Latino, R. J., & Latino, K. C. (2002). *Root cause analysis: Improving performance for bottom-line results.* New York: CRC Press.

Leithwood, K., Aitken, R., & Jantzi, D. (2001). *Making schools smarter: A system for monitoring school and district progress.* Thousand Oaks, CA: Corwin Press.

Levy, F. & Murnane, R. (2004), The New Division of Labor: *How Computers are Changing the Next Job Market*. Princeton University Press.

Little, J. W. (1993). Professional community in comprehensive high schools: The two worlds of academic and vocational teachers. In J. W. Little & M. W. McLaughlin (Eds.), Teacher's work: Individuals, colleagues, and contexts (pp. 137–163). New York, NY: Teachers College Press.

Mintrop, H., & Trujillo, T. (2005). *Corrective action in low performing schools: Lessons for NCLB implementation from first generation systems*. Education Policy Analysis Archives, 13(48).

Moore, Geoffrey A. (1999). *Crossing the Chasm*. Harper Business Essentials.

Morris, A. K., & Hiebert, J. (2011). *Creating shared instructional products: An   alternative approach to improving teaching*. Educational Researcher, 40(1), 5-14.

Pearson, P. D., & Gallagher, M. C. (1983). *The instruction of reading comprehension*. Contemporary Educational Psychology, 8, 317-344.

Scneider, B., McDonald, S-K., eds. (2007). *Scale-Up in Education*. Rowman & Littlefield Publishers, Inc.

Senge, Peter. (1990). *The Fifth Discipline: The Art and Practice of the Learning Organization*. New York: Currency Doubleday.

Spillane, J. P., Mesler Parise, L., and Zoltners Sherer, J., (2011). *Organizational Routines as Coupling Mechanisms: Policy, School Administration, and the Technical Core,* American Educational Research Journal, 48: 586-619 (first published on October 18, 2010.

Stein, M. K. & Coburn, C. E. (2008). Architectures for learning: A comparative analysis of two urban school districts. *American Journal of Education, 114*(4), 583-626.

Wenger, E. (1999). *Communities of Practice: Learning, Meaning and Identity*. Cambridge: Cambridge University Press.

Winter, S., (1996) in Cohen, M. D., Burkhart, R., Dosi, G., Egidi, M., Marengo, L., Lassimo, W., & Winter, S (1996), "Routines and other recurring action patterns of organizations: Contemporary research issues", Industrial and Corporate Change, 5:3, 653-6.