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The SERP Approach to Research, Design, and Development: a different role for research and researchers

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The Strategic Education Research Partnership (SERP) was established in response to a National Research Council (NRC) committee report that envisioned a partnership between leading scientists and education practitioners to develop a problem-focused, coherent program of education research and development tightly coupled and interactive with practice (NRC, 2003). The SERP organization has two intertwined goals: to develop a program of problem-solving research, design and development (RD&D) that has the potential to improve teaching and learning at scale, and to develop the infrastructure that allows researchers, practitioners, and designers to interact routinely and productively in support of continuous improvement in educational practice. The second goal determines our approach to the first.

School systems are highly complex, loosely coupled organisms dependent for their functioning on distributed responsibility for the many inputs into education delivery. Change in such organizations—whether in education or other sectors-- requires agreement from many parts of the systems, any one of which can stop the effort in its tracks (Garvin and Roberto, 2005). Creating the capacity to work across multiple levels of the system is therefore necessary, but to do so successfully requires a major investment in establishing relationships, building trust, developing norms of interaction, and cultivating shared commitments. These commitments are not supported by the incentive structures in universities and school systems, and cannot be quickly won. The SERP model is thus anchored by the creation of long-term "field sites:" ongoing partnerships

with school districts in which the norms and routines of collaboration evolve with experience and become deeply rooted over time.

Investment in infrastructure is common parlance in economics, where it refers to the structures—roads, airports, energy grids--that support economic activity. Whether an infrastructure investment is warranted depends on the importance and the permanence of the goal. We do not make an infrastructure investment for a single Broadway show, for example, but we enhance infrastructure for the Olympics. More importantly, a city's ongoing investments in infrastructure are for purposes of making possible whole classes of activity –commerce, employment, education, performing arts, sports events--that are highly valued and not specifically defined. SERP's goal in building an "infrastructure" is to create the metaphorical equivalent of new roads that link researchers, practitioners, and designers in order to allow for more routine engagement in "problem-solving" RD&D. The desired infrastructure includes: 1) dedicated staff time to initiate and support collaborative interaction; 2) dedicated staff time to lay the foundation for the work by coming to understand district contexts, including existing structures, mechanisms, and practices; 3) space strategically located and designed for collaborative interactions to take place; 4) resources to develop a data management system and broad data sharing arrangements with partners; and 5) the establishment of pathways for practitioners at all levels to participate in the collaborative processes. To date, the investments in the SERP model have been a small fraction of what the NRC panel envisioned; more path clearing than road building. Nonetheless, lessons learned thus far can contribute to broader efforts to rethink the relationship between research and practice.

Given space constraints, we limit ourselves to describing the evolving theory of action that guides SERP work, and its implications for the role of research and researchers.

The SERP Theory of Action is depicted in figure 1. The desired outcomes are student achievement gains at scale *and* knowledge accumulation, integrating the goals of practitioners, policy makers, and researchers. Achievement gains at scale require tools, programs, or practices that can transport improvements from one location to another. Designing such tools is a complex and uncertain enterprise, and the pathway to success is littered with failures. As Coburn , Bae & Turner (2008) point out, the authority to

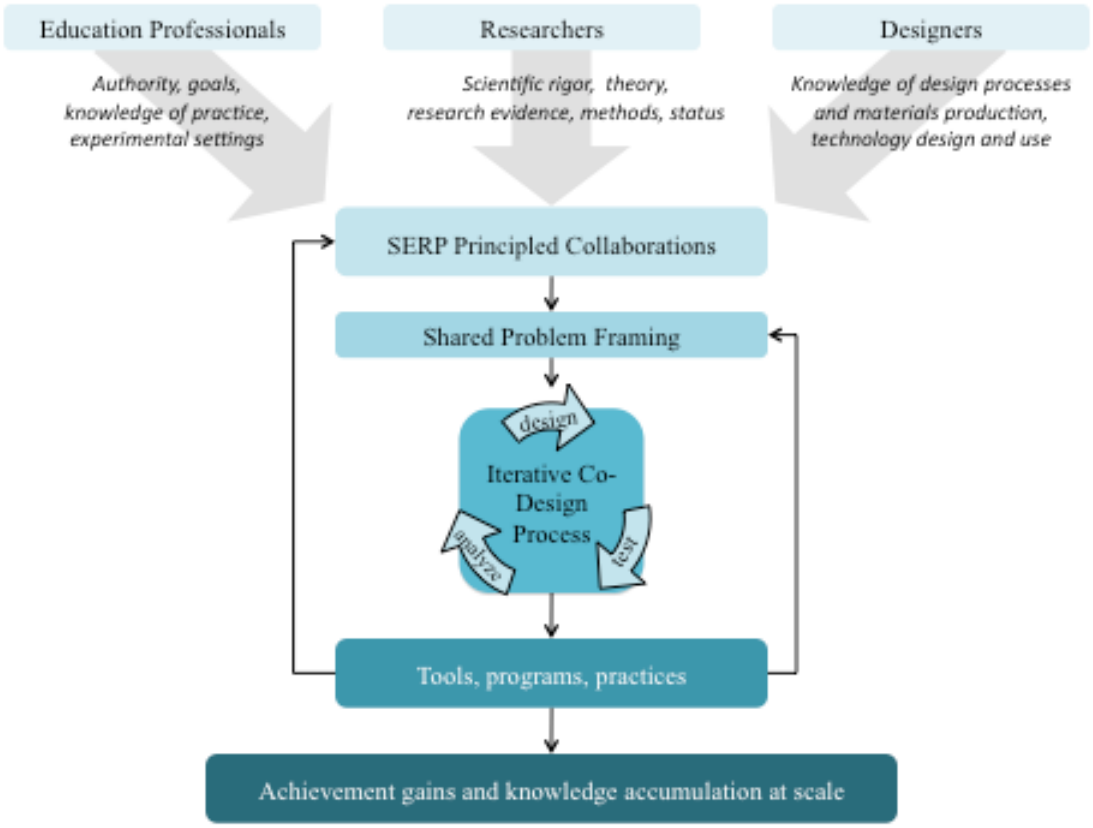

Figure 1: SERP Theory of Action

approve a project rests with the District, and must be won. School systems have every incentive to avoid experimentation because the rewards of success are likely to pale in

comparison to the consequences of failure. The SERP model assumes that the authority must be traded for the right to determine the priorities for the work—a right that typically rests with researchers. This is a major shift in the role researchers are asked to play.

District priorities are generally painted with a broad brush: "high school students can't comprehend their textbooks," or "the achievement gap in mathematics widens dramatically in middle school." Diagnostic and prognostic framing (Snow & Benford, 1992; Coburn, Toure & Yamashita, in press) of these broad problems is required before any iterative design work can even be conceptualized.

Research knowledge is critical to effective problem framing, but that knowledge does not stand on its own. It needs to be contextualized by those with knowledge of practice, and put to use by those with knowledge of design. The SERP model calls for "principled collaboration," a term that signals the need for an intentional and managed approach to interaction that will support productivity. Identifying principles is critical to becoming better at the enterprise in which we are engaged. They are the vessels for carrying lessons learned from one effort to the next. Because we are attempting to cut a path through poorly charted territory, the principles are in a stage of rapid evolution. We touch of a few here:

- ***the principles of collaboration that guide the negotiation of a problem definition***. SERP processes locate the framing of problems in highly multidisciplinary teams from the research community, with representation from multiple levels of school districts, and with people who bring design expertise. Norms for interaction include the following:

- district leaders determine the priority, and have veto power for any planned activity in schools;
- the problem, and the approach to solution, must be framed for relevance to a wide range of districts;
- researchers have ultimate authority in research design in order to ensure research validity and integrity, but logistics of research conduct are negotiated with the districts and schools.

In order to follow the contours of a problem, reframing or broadening the problem definition is expected over time, requiring greater flexibility in the RD&D process than is desirable in more traditional research settings.

- ***the principles that guide co-design of programs, practices and tools.*** It is taken as a given that practitioners, researchers, and designers are all engaged in the design process. Additional principles emphasize:
  - the need for tools to have "handles" that allow teachers to pick them up and learn by doing, rather than requiring extensive training up front;
  - the importance of designing tasks that stimulate the desired behavior directly rather than requiring teacher/administrator expertise before the task is potent;
  - the need to design for teachers at three phases of expertise (Phase I: focused primarily on classroom management; Phase II: able to focus on student engagement, often going beyond the regular curriculum, and Phase III: able to focus on student thinking and learning, adapting curriculum as appropriate. (Schoenfeld, 2011).

- the need to test ideas early and often in practice contexts, avoiding natural tendencies to "make it beautiful" before the "it" is trialed.

- ***the principles of designing for scale*** from the outset. Designing in context can lead to a local focus that will impair scalability. SERP work disrupts that focus with explicit and repeated attention to designing with scaling in mind. Lessons pertaining to scalability are harvested from every effort and incorporated into evolving design principles. Current principles emphasize:
  - ***digestibility:*** new approaches must fit well with the routines of classrooms and schools, and live within the mechanisms for district management and decision making.
  - ***interpretability:*** practitioners need to know how and why to use new tools, programs, or practices and need feedback on their impact—thus requiring the design of feedback mechanisms**.**
  - ***sustainability:*** tools, programs, or practices must fit within the budget constraint and professional development model of districts ***or*** provide extensive guidance on how to reallocate resources.
- ***Principles for knowledge accumulation***: SERP work is made available through websites that are structured to share and support the use of SERP tools, knowledge, and research instruments. The organization and communication of knowledge via the web is itself the subject of SERP design efforts.

As the theory of action plays out in SERP collaborations, research plays a central role--not unlike its role in the development of new surgeries or dental practices. It informs the framing of problems, it provides specifications for solutions, and it offers methodologies

for design research and for evaluation. But in order to achieve the goals of problem-solving and knowledge accumulation at scale, the work of researchers must be productively integrated into the work of practitioners and designers. With experience we are identifying the principles that allow those collaborations to be productive. But a true test of the approach to research and development argued for by the NRC panel in 2003 will require a far greater investment in the infrastructure for collaborative RD&D.

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