**THEORTICAL BACKGROUND**

**Professional Development Models that Support Systems-Level Instructional Improvement**

Currently educational systems are not designed to adapt or improve instruction. Systems are designed to adopt and distribute “best practices.” The process of dissemination positions educational researchers or other proclaimed instructional experts as knowledge-holders and practitioners as knowledge-receivers. In such systems impact on classroom practice is slow and inequitable (Horn, 2014) and some might argue non-existent. Cuban (2013) describes efforts to improve instruction within the U.S. education system as largely unsuccessful; he argues that what is at the core of teaching—instructional expertise—has remained fundamentally unchanged for more than a century. Most efforts to improve instruction are top-down approaches in which teachers are given little time to interpret new instructional practices, PD takes place outside of the classroom walls and there is no focus on local adaptation or innovation. Bryk et al. (2011) argue that, while innovations abound in education, “there are no extant mechanisms to test, refine and transform practitioner knowledge into a professional knowledge base in education…the field suffers from a lack of purposeful *collective* action” (p. 5). They suggest that a diverse colleagueship of expertise is necessary to make progress (Bryk & Gomez, 2008) and forward the work of teaching, not just individual teachers.

Professional development that is embedded in the work of teaching—also known as job-embedded professional development—can function as a mechanism for localizing and improving teaching practices and as a part of a system that learns from classroom adaptions. In our model school teams of teachers, coaches, principals and educational researchers, collectively make sense of new teaching practices by engaging in principled experimentation in classrooms (Kazemi & Hubbard, 2008) multiple times during an academic year. We adapted a model that from the Teacher Development Group (TDG, 2010) which makes use of “Studio Days”; these are full day professional development days in which teams co-plan, co-teach and co-debrief lessons multiple times during a day. Important to our Studio Day Model is an underlying set of research-based science teaching practices which orient teaching and learning toward the development of students’ scientific practices of models and explanations and making student thinking explicit (Windschitl, Thompson Bratten & Stroupe, 2012). The aim of our ongoing professional development is to collect practice-based evidence for *which teaching strategies work best, under which conditions* and *for whom*. This work differs from that of a typical Lesson Study model, which typically focuses on demonstration of high-quality lesson in the context of a design experiment in a focal classroom (Lewis, 2006; Lewis, Perry & Murata, 2006). In lesson study the unit of analysis is a particular lesson and in the studio day model the unit of analysis is a specified teaching practice that can be iterated on over the course of a year, not Similarly, the Studio Day model also aims to show a different version of what is possible in the classroom but through collaborative inquiry (Crocran-Smith & Little, 1999) and explicit conversations about teaching practice, theories of student learning and the use of practical measures. In this model the work of translating the Next Generation Science Standards into high-leverage teaching practices is not left up to individual teachers; instructional teams address implementation challenges and negotiate competing messages, norms, and practices by reinterpreting policy in a locally relevant ways, and working on the problems of implementation (Coburn, 2006; Rigby, 2014).

**Key Principles of the Studio Model**

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| Principle | What It Looks Like, in Practice |
| 1. Joint activity is focused on student learning and its relationship to teaching practice. | We collect evidence of student learning (observations, artifacts) and to consider it together *before* discussing instructional implications. We establish a norm around grounding discussions of instruction in what we saw and heard from students. |
| 2. Teaching is explicitly framed and treated as a collaborative endeavor. | It is not the host teacher’s lesson. It is **our** lesson, which we conceptualize and plan together. We aim to learn from everybody’s experiences and backgrounds and to come to overall consensus on instructional decisions. |
| 3. The work is localized in teachers’ specific contexts. | Studio Days look different in each school we work with because they take into account schools’ initiatives, professional norms, student populations, etc. We grapple with how science instruction that emphasizes sense-making about phenomena can be realized in varied contexts, and support generative adaptations and variations.  |
| 4. Joint activity is supported by routines and tools that facilitate generative conversations over time. | We have developed shared routines and tools that let us get right into the work together, press for important connections (e.g., between student data and practice decisions), and document our learning over time so we can build from where we left off. |

**Networked Improvement Community Article & Videos**

Article here: <https://education.uw.edu/news/all-it-together>

<http://stemforall2016.videohall.com/presentations/649>

<https://education.uw.edu/news/aera-highlight-creating-hybrid-practices-english-learners-and-science-teaching>

**Studio Day PD Model videos**

Overview of StudioDay Model: <http://www.youtube.com/watch?v=Fc_kQXYG5pY>

Briefing stage: <http://www.youtube.com/watch?v=WIeDPcKTEFM>

Coteaching stage:<http://www.youtube.com/watch?v=ePLBVibdnAg>

Debriefing stage: <http://www.youtube.com/watch?v=e6PXKOmRfwk>