

NETWORKED IMPROVEMENT COMMUNITIES

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VEXATION: Six years ago our research team took up a series of studies on the classroom practices of new science educators. We hoped to learn enough to somehow accelerate novices' development towards rigorous and equitable teaching. Among our early findings were that novices struggle with the very aspects of teaching that are crucial for students' participation, identity development as capable knowers, and to meaningful forms of learning. For example, our beginning educators could elicit students' science and everyday ideas, but they could/did not use these as resources to extend student thinking; they could not sustain meaningful and purposeful discourse in the classroom, and they could not help but funnel kids towards the reproduction of canonical explanations from the text. And, from a planning standpoint, they struggled to identify ideas with explanatory power in their curriculum and embed these in anchoring phenomena that kids could relate to.

As we contemplated how to support more ambitious forms of instruction, we began reading in the literature about the emphasis on teaching as **practice**. Teacher education journals promoted the development of "practice" as the new foundation for pre-service preparation. From the broader literatures in subject matter areas came the idea of high-leverage practices (primarily from Mathematics with increasing interest from English/Language Arts and History). More recently the notion of a limited set of **core** practices, that all teachers should become proficient in, has been circulated. For us then, the notion of a practice-based beginner's repertoire began to take shape—a set of specific, recognizable practices that could be taught to and learned by beginners. But beyond that it could also form the basis of a common language among novices and their mentors, and could become the basis for a system of tools to support a community engaging in these practices. Historian Dan Lortie seemed to frame the problem we were trying to solve (written nearly 35 years ago), arguing that the lack of a technical core in education allowed teachers to invent their own definitions of what works based on individual experience or folklore, and that this might explain the "reflexive conservatism" that characterizes instruction in classrooms. Working in isolation and unable to transcend their own experiences, teachers continually revisit and cement the relationship between their beliefs and what they do with students.

Our challenge seemed clear. In response we developed a system of four "core" practices tailored to the needs of beginners. We now refer to them as: developing a big idea; eliciting students' understandings; making sense of material activity; and constructing evidence-based explanations. We also developed a system of tools (discourse tools, video of exemplary teaching keyed to the practices, a teaching progression for the practices, samples of student work, heuristics for developing big ideas to teach, and more...). In testing these with beginning secondary educators in high needs classrooms we documented that many (but by no means all) of our young teachers demonstrated the kinds of rigorous and equitable instruction we had hoped for, in some cases engaging in remarkably sophisticated pedagogy that we had not seen even in experienced teachers. In the process (and true to an anthropological view) they began to develop their own sets of tools for their specific classroom needs, for example tools for supporting student talk about evidence, student metacognition, and students' testing/revising of scientific models. Importantly, we no longer feel that these practices and tools are useful only to beginners, we have had many experienced teachers and teacher leaders in the Puget Sound region take these up in their own classrooms and as the basis for professional learning communities.

Our vexation? We now feel that we have to scale up this system. But these practices are not like clothes you can just try on. They have been carefully modeled for our teachers, rehearsed by them under sheltered circumstances and debriefed multiple times in the university setting and in the field. Coaching and feedback are essential, but supporting beginners' attempts at these practices requires its own levels of instructional expertise. Moreover, these practices are ambitious partly because these are so unlike the conservative practices used in many science classrooms (see TIMSS video study, *Science Education in Europe: Critical Reflections, Looking Inside the Classroom*, etc.). There is the inevitable pushback from cooperating teachers and from departmental peers.

We would like to know, for a wider population of educators whom we may never interact with in person, are there ways to: 1) represent our own knowledge and experience to them, using some form of technology infrastructure 2) cultivate familiarity with the practices and some level of expertise among those who would be teaching pre-service teachers or leading experienced practitioners, 3) stimulate a sense of co-ownership and a long term commitment to the work by them so that practices and tools have a chance to work and be refined, 4) tap into the wisdom of practitioners and teacher leaders and incorporate their ideas into the system, 5) and, for us, not make the predictable mistakes about scaling up (especially when relying on technology as a key element) that others have already warned about? We are out of our comfort zone here, leaving the familiar territory of instruction and learning, and sailing out into what seems like a working space more defined by sociology and organizational thinking.

VENTURE: To address this challenge we are now planning to implement a model becoming common in medicine and industry (see Goldsmith & Eggers 2004; Podolny & Page 1998; Powell 1990) referred to as a **Networked Improvement Community** (Englebart, 1992). We believe it addresses our five "vexation" concerns, at least theoretically. This community is made up of three inter-related levels of participants and their interdependent activities (Figure 1).

A-level activity is the on-the-ground work of carrying out the organization’s primary business. The “A” level in our model is the classroom where teachers and students use a variety of tools and other resources to mediate learning directly. We are referring here to the core practices that support ambitious (rigorous + equitable) teaching. Teachers not only implement the tools and practices, but also test their effectiveness under different instructional conditions or test new variations of these resources. If teachers can provide evidence of improved student learning or participation as a result of an innovative adaptation, that resource can be distributed to the larger community at the C-level (described later).

B-level activity describes organizational efforts that are designed to improve the on-the-ground work. The “B” level functions as a local improvement network (LIN) and consists of clusters of participants, including individuals involved in teacher preparation (interns, mentor teachers, methods instructors, etc.) or district consortia (teachers, coaches, department heads, professional development providers, etc.) These local-level clusters regularly interact for the purpose of collectively and collaboratively improving their teaching and learning through the principled testing of classroom practice. We plan to use the tools we have developed for classroom practice, as well as the tools we designed for mentoring around these practices, to support groups of practitioners in adopting ambitious practices in their local schools, and in creating practice-driven innovations in the tools and practices themselves. Just as individual teachers from the A-level can propose new variations of classroom practice to the larger community, the leaders of LINs can propose changes in the collaborative processes that support teacher conversations about experimentation with ambitious practices. Through summer institutes and on-line forums, this project will directly support the development of about 30 LINs in their work.

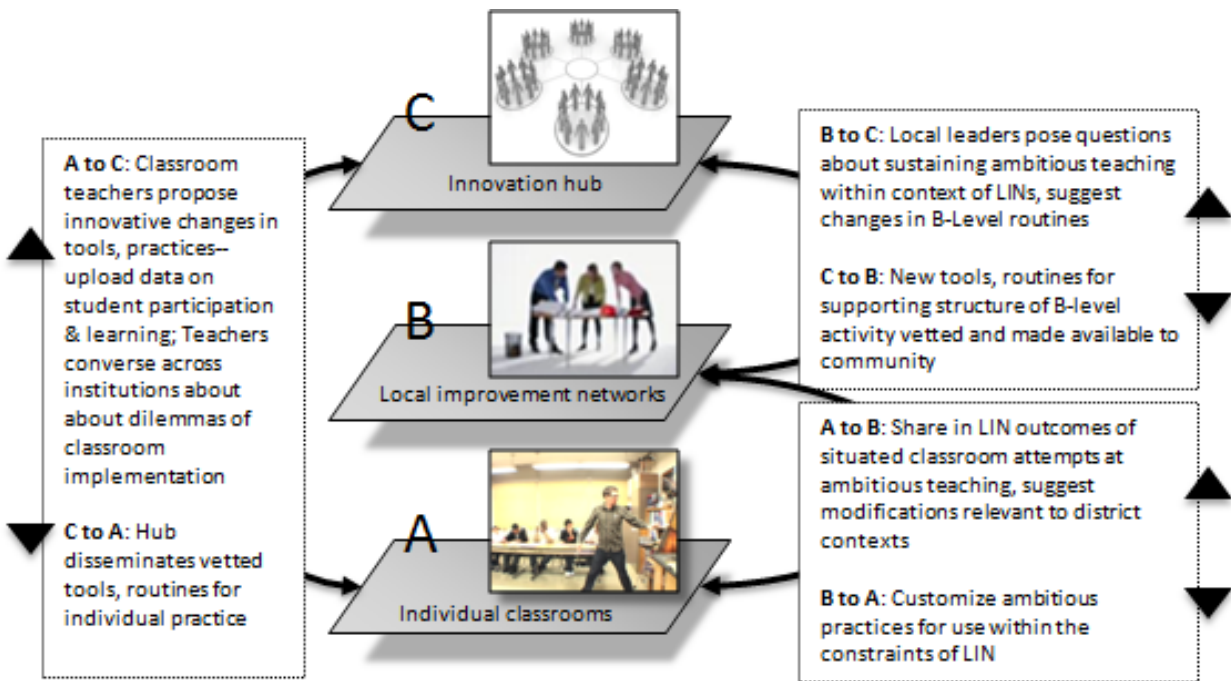


Figure 1. Activity within the Networked Improvement Community

C-level activity is trans-institutional, generating the capacity for learning to occur across organizations. The C-level is comprised of a small number of experienced teachers, teacher-leaders, and researchers, who manage a web-based innovation hub that “houses” the resources of the community. In our proposed system, these individuals vet suggestions for changes forwarded electronically from the A and B-levels to the community’s tools, practices, and other resources. They also analyze input from the LINs to frame problems of collaboration and individual practice in ways that are more tractable for developing solutions. Having the technology-mediated means for individuals both at the C and B-levels to look at how activity varies across different organizational contexts puts relevant aspects of the contexts in sharper relief and can help each local setting see its efforts from new vantage points. Englebart (2003) notes that C-level activity affords mechanisms for testing the validity of local knowledge, adjusting local understanding of the true nature of a problem, and advancing local support structures for improvement in classroom practice. For this project we plan to put the “shared expertise” together across the network to solve persistent equity-based problems of practice that have surfaced in our prior research, and that appear to be common problems in reform-based teaching.