

eacher networks have been recognized in recent years as a bright spot in the vast and somewhat confusing discourse on school reform in the U.S. Why? Because these networks work. They transform a teacher's practice by immersing them in a pool of invaluable knowledge and collective experience. Teachers then bring their newfound confidence and expertise into the classroom. As it turns out, keeping such a network running smoothly requires maintaining a delicate balance between various tensions and needs of the group. These tensions include:

- **Learning vs. Collegiality:** The emphasis placed on member learning vs. member camaraderie, or a learning environment vs. a social environment.
- Content vs. Pedagogical Knowledge: The emphasis placed on concrete knowledge and concepts vs. reflection on the craft of teaching itself.
- Delivered vs. Constructed Knowledge: The
 emphasis placed on knowledge that is prescribed
 and injected by established network leaders without
 member input vs. letting network interfacing to
 take its own course, allowing for self-reflection,
 discovery and equal leadership opportunities.
- Outside vs. Inside Knowledge: The emphasis
 placed on contribution of visiting experts vs. collective peer knowledge within the network.

What stance does a successful network take in these tension areas and what specific strategies does it use to reconcile them? Leaders of four exemplary, well-functioning, sustainable teacher networks, including the nationwide Math Teachers' Circle Network, weighed in with tips on how they keep their own networks ticking.

Learning vs. Collegiality

Research shows that networks that focus on relationships among teachers first are more successful than ones that neglect this aspect. In order to establish a sustainable foundation among members, time and financial support should be devoted to activities that build trust and a common identity.

Above all else, foster relationships first; trust and bonding are the foundations of learning and longevity. There are a number of ways to solidify relationships in a network, but to neglect the process altogether is fatal. Many MTCs overcome this challenge with a strong emphasis on the social aspects of the Circle. Friendships are forged in intensive founding workshops and the social aspects of the Circle are further emphasized with ongoing Internet contact, end-of-year social events, and often, a shared meal to start evening meetings throughout the year. Initially, the relationship-building process is important because it builds the trust necessary to forge a path to learning and participation. Second, positive relationships keep teachers motivated to continue to interact. Teachers are more willing to incur the burdens of travel if they are excited to see their colleagues, who have become good friends. Third, strong relationships perpetuate network energy and foster growth.

Find ways of incorporating relationship-building into the learning agenda as seamlessly as possible.

The easiest way to get anyone to learn is to make it fun and interactive. The MTC Network employs a team-approach philosophy of problem solving in its workshops to simultaneously foster friendships and learning.

Content vs. Pedagogical Knowledge

Networks struggle to find reconciliation regarding the topics they choose to emphasize. Content knowledge includes curriculum and subject knowledge; procedural

knowledge, such as lesson plans and classroom management; and discrete technical knowledge. Alternatively, pedagogical knowledge involves the broader questions of teaching, demanding self-reflection and abstract conceptual inquiries about teacher-student roles.

Use demographic knowledge of the network population to target the emphasis of knowledge type. Representatives from each of the teaching networks surveyed observed that, of each general area of knowledge, it is content that teachers lack the most. And indeed, if teachers are only one step ahead of their students in content knowledge, then they cannot help them to make the broader connections necessary for a rigorous education. All of the networks initially went through some process of research gathering (generally informal) to determine the knowledge void they were intended to fill.

Build pedagogical expertise into the context of teacher learning. Here, the MTC method serves as an outstanding example of how a network might successfully reconcile this area of tension. The focus of the learning is on content, but the social structure within which teachers interact both tacitly and explicitly challenges them to reconsider the teaching craft. As teachers struggle collectively to formulate solutions to rich math problems, they find themselves engaged in a style of learning that inevitably compels them to reconsider their own classroom model. Teachers often contemplate, "I'm absorbing so much information and it's fun too. Could my classroom work this way?"

Delivered vs. Constructed Knowledge

This tension area primarily examines knowledge sources. Delivered knowledge in its pure sense is that which is prescribed, preplanned and presented to network participants with little to no reciprocity, as in a lecture. Constructed knowledge is defined by egalitarianism and spontaneity; network members learn and interact without clear premeditated direction and leadership.

Build supports, not obstacles; ultimately, structures should be teacher-driven. The only way to know how to successfully balance delivery and construction is by clearly understanding what teachers want. Pursuant to this, all networks evaluated carry out all of their core activities with a high level of teacher input and provide clear and easy avenues for feedback.

Reward progress and exhibit accomplishments to **empower learners.** Many teachers begin their network participation preferring to be learners; however, great networks change individual perception over time by engendering transformation. The transformative experience occurs when novice teachers deeply invest themselves in the network and in turn find at some point that they have progressed greatly and are confident in being a leader in the network and in their schools.

Outside vs. Inside Knowledge

A network that utilizes outside knowledge brings in "experts" or field practitioners not inculcated into the network to contribute in a variety of ways. Inside knowledge constitutes all knowledge and experience of network members. The search for this delicate balance poses the question, "How do you improve capacity without implying incapacity?"

Always ensure that teachers feel in control of their learning. Networks that successfully balance the use of outside expert knowledge emphasize the view that all network activity should be teacher-driven. The MTC Network employs a paradigm where an expert mathematician will begin a discussion on a topic, often with a brief presentation, followed by at least an hour of teacher-driven open conversation. In such cases, teachers welcome the inclusion of outside knowledge as it is used as a tool simply to inform a broader dialogue on the topic.

Utilize referrals to specifically target experts with teaching skills. Because the MTC learning model is built around the mathematician-as-leader idea, it is important to integrate the expertise of leaders with some level of teaching experience or, at minimum, strong communication skills. Many MTCs work around this problem by zeroing in on prospective session leaders with comprehensive skills in math and teaching, or, alternately, having a mathematician co-lead a session together with a teacher.

Clinton Morrison is a Master of Public Administration candidate at the University of Colorado Denver. This article contains research he completed for the Colorado Legacy Foundation to help launch a statewide network for Advanced Placement teachers. View a copy of the complete study on our website.