

# Advice from the Field of Teacher Networks: Informing a Potential AP Teacher Network in Colorado

*A study prepared for the Colorado Legacy Foundation*

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## ABSTRACT

*In recent years, teacher networks have been recognized as a bright spot in the vast and somewhat confusing discourse on school reform in the US. Research shows that these networks have a significant impact on a teacher's practice, but to what extent we know the detailed strategies of these networks and how, specifically, they affect teachers is still in question. Building on the research of others in the field, this project closely examines the detailed activities and programs of four current exemplary teacher networks and how they use them to achieve their objectives. The information gathered from these networks is synthesized as a body of comprehensive recommendations that, taken together, suggest a picture of effective design.*

*With all of this in mind, this project is client-based. While the information revealed in the research is applicable to a large range of teacher networks, it is specifically tailored to inform the proposal of a network of Advanced Placement teachers in Colorado, spearheaded by the Colorado Legacy Foundation.*

## **Introduction**

This research project was designed to support the ongoing efforts of the Colorado Legacy Foundation. CLF is a research based nonprofit working on behalf of the Colorado Department of Education and all Colorado school districts. CLF searches near and far for innovative strategies to improve its schools in a variety of ways. Pursuant to this, CLF is preparing to usher in, in partnership with the National Math and Science Initiative, the Advanced Placement Training & Incentives Programs to Colorado. APTIP is an innovative and proven approach to improving teacher expertise and student achievement in the AP classroom. As a supplement to enhance APTIP in Colorado, CLF is considering the development of a statewide AP teacher network. Field research suggests that effective collaborations among teachers benefit them in a variety of ways and foster student achievement.

Advanced Placement is a standardized, rigorous program administered by the College Board for high school students who want an opportunity to take undergraduate level course work in their high schools. Currently, Advanced Placement is offered in 33 subject areas. One of the primary goals of the coursework is to prepare students for a standardized AP Examination in their area of study, administered towards the end of the school year. Students who achieve certain standards in the exams can receive college credit.

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The public conversation about school reform in the US is complex, amorphous and- to the cynic- tired. There is a general sense of bewilderment when it comes to devising a body of clear and precise strategies to revitalize our schools, which are regularly climbing down the ladder of international competition. In the ever-present quest to find Superman, teacher networks have emerged as an undeniable talking point. Why? Because these networks work. Above all, they

transform a teacher's practice by immersing them in a pool of invaluable knowledge and experience collectively of their peers. And the payoff? Teachers bring their newfound confidence and expertise into the classroom. We know this because of the diligent work of researchers who study these networks, not to mention the testimonials of teachers themselves. There is a catch, however. Bringing teachers together to collaborate does not magically generate the transformative experience we desire. Networks must construct and stick to a body of strategies that foster both learning and camaraderie. *Why are successful networks successful? What is it about these networks that transform teachers?* Through a rigorous examination of the literature and several interviews with representatives of model networks, this paper reveals a body of comprehensive recommendations for developing and sustaining a great teacher network.

Like any social phenomenon, teacher networks are difficult to define. A network can range from a large and well-organized national institution with a full time staff and a website to a handful of 7<sup>th</sup> grade science teachers meeting at a restaurant once a month to discuss their lives and practice. Some networks are designed to last for a single summer period while others attempt to sustain indefinitely. Some teacher networks try to incorporate the input of experts, administrators, parents and students while others rely exclusively on peer teacher membership. Some networks are more hierarchical and others more egalitarian. Nevertheless, it will be useful to operate this research project with a general working definition of teacher networks; one that is broad enough to tie these differences together and narrow enough to exclude related but superfluous elements.

A teacher network can be defined as *a collection of teachers who: interact voluntarily and have opportunities to take leadership roles; have a shared sense of reform purpose related primarily to school improvement and self-reflective pedagogical inquiry; and seek both learning*

*and collegiality through collaboration* (Parker, 1977; Chrispeels & Burke, 2003; Firestone & Pennell, 1997; Swenson, 2003; Niesz, 2007).

To better understand the meaning and character of teacher networks- and thus the overture to this project's purpose- it is necessary to briefly discuss their origin. The educational institutions of the early 20<sup>th</sup> century were, like most other institutions at the time, characterized by a scientific management paradigm ushered in by the Pendleton Act of 1883 and succeeding legislative reinforcements. Teachers were entrenched within a rigid hierarchy that to a great degree determined the curriculum, pedagogical ethos and so forth. Naturally, the psychological contract among teachers and their superiors (administration, policymakers) was 'child' to 'parent' (Hicks, 2007); and the philosophy of professional development heavily emphasized top-down prescriptions with little reciprocity.

We have witnessed a steady departure from the scientific management legacy over the past fifty years, but, evidently, the pace has been too slow. One clear truth that can be extrapolated from historical observation is that societies tend to change prior to and faster than the institutions that function on their behalf. Teacher networks are a case in point. Emerging in this time period were a number of proto-networks, created by frustrated teachers who strove to affect the school systems in place. They were, "tired and dissatisfied with the simplistic view of them as part of a traditional routine...an empty meaningless, school" (Unda, 2002). They regarded this perspective as an "indictment of the teacher's practice" (Unda, 2002). In their endeavors to spark a shift, they sought power and validation through peer congregation. Much more was at stake than first meets the eye; these vanguards saw the role of the teacher not only diminished within the closed school system but in society at large. From this description, it should now be clear why teacher networks came to be. *They were anti-establishment*. Their purpose and identity were founded on the reformation of existing systems, and from that point of view, these networks could be viewed as

movements as well. Even today, as there continues to be strong dissatisfaction with the establishment, most existing teacher networks are interchangeably called ‘reform networks’ - a name that has stuck since their adolescence. After all, remnants of the past such as classified compensation are still realities today and are always potential platforms for organized dissent.

In today’s teacher networks, the intensity and character of opposition to the establishment highly vary. That is not to say that the birth of a network does not require a point of passion that individuals can rally around. Indeed, there must always be “a compelling idea...a dust particle around which to coalesce” (Leiberman & Grolnick, 1996). Another clear observation about the nature of institutions throughout history is that, in their instinct to survive, they attempt to either eliminate or absorb a threatening Other. The strategy of most school systems in the US- and it is the right one- is to embrace networks in all degrees of opposition, to hear their grievances and foster their development. This strategy is based upon three major premises. One, it is exceedingly clear that improvement in student learning depends largely upon positive changes in teachers’ practices (McDonald & Klein, 2003; Swenson, 2003). Two, teacher networks clearly foster many positive changes in a teacher’s practice (including motivation, attitude and expertise) (Hofman & Dijkstra, 2010; Swenson, 2003). And three, by default it does not seem possible to squelch the growth of these networks. Some state-sponsored networks have seen success, improving teacher knowledge, motivation and empowerment (Firestone & Pennell, 1997). In order to prevent large-scale dissent, these designed, institutionalized networks must show special restraint in overt top-down behavior and provide extrinsic incentives for participation (Firestone & Pennell, 1997).

## **Purpose**

This brief discussion on history and origin provides a necessary primer. The historical trend of relationships among teachers and institutions reveals a predictable pattern that now permits a theoretical assertion. Social structures- keeping in mind teacher networks- always oscillate within a bipolar ideological continuum. At one end of the continuum there is the extreme view that all networks should be highly structured, hierarchical and prescribed (Gerth & Wright Mills, 1973). On the other end the opposite exists, where the network is purely egalitarian; each individual shares leadership (or better, there are no leaders) and all functions are executed spontaneously within the society by its members (Wadsworth, 2003). This ideological continuum holds true for all types of networks on all levels. For instance, teacher networks struggle within this bipolar ideological structure as they attempt to transform teachers and schools at large. But also, these networks have this same structural tension within themselves as they face decisions regarding the purpose of the network, its rules, norms, procedures and so forth- especially during stages of growth.

To be clear, I make two main assumptions in formulating this project. The first I have already introduced: this bipolar ideological continuum is a reality and is intelligible in explaining the behavior of social groups. And now second, I posit that both paradigm extremes have qualities that are vital to healthy networks, *but* no social network could nor should exist at either extreme as the reader will find in the literature review (read, primarily: Penuel & Riel (2007)). Naturally, network members negotiate to find reconciliation somewhere in between. As one might expect, this constant negotiation (both explicit and implicit) between the two poles can generate tension among network members regarding almost every facet of the network. A focus on these tensions brings the purpose and scope of this project into full view.

Network tensions do not arise in themselves but, rather, are consequences of specific issue negotiation. The tension areas examined in this project are most relevant to the core activities of teacher networks.

- *Learning vs. collegiality*: The emphasis placed on member learning in terms of improving pedagogical practices vs. fostering psychological support, mutual validation, venting and so forth.
- *Content vs. Pedagogical knowledge*: The emphasis placed on discussing concrete knowledge for direct delivery to students vs. facilitation of self-reflection and the craft of teaching.
- *Delivered vs. Constructed knowledge*: The emphasis placed on knowledge that is prescribed and injected by established network leaders without member input vs. allowing for network interfacing to take its own course and equal leadership opportunities.
- *Outside vs. Inside knowledge*: The emphasis placed on contribution of experts and field practitioners vs. collective peer knowledge within the network.

These areas of tension mark the core of this research, around which interviews will be primarily focused and findings will be presented. A singular research question ties these tensions together:

- *What stance does a successful network take on these tension areas and what specific strategies does it use to reconcile them?*

Ultimately, this project should accomplish three major goals:

- To connect network views in each of these tensions areas with the strategies used to accomplish them.
- To pinpoint remarkable patterns and innovative ideas in connecting means and ends among all networks examined.
- To develop a comprehensive body of sound advice that might inform the development of an AP teacher network in Colorado.

As a researcher whose task it is to synthesize information in a way that speaks specifically to an AP network, it is necessary to keep in mind some notable characteristics and challenges unique to AP teachers.

- AP teachers are interested in teaching challenging subjects that resemble college level content and draw the interests of students with higher level thinking skills.
- Content has a high degree of standardization and there is an added pressure to produce results on AP exams.
- AP teachers can teach in up to 33 subject areas, each being different in varying degrees in terms of content and necessary delivery methods.

Finally, I find it vitally important- in the spirit of clarifying the scope of this project- to briefly explain exactly what this project *is not*.

- This project is not a philosophical examination of ideology. In other words, ideology will not be examined on the basis of its own merit. A review of literature will introduce much of the rationale behind the arguments in each of these tensions areas, however, where networks tend to lean ideologically is only important insofar as it provides a foundation for reasonably connecting means and goals.
- This project is not a how-to-guide to starting and maintaining a network in the logistical sense. Therefore, issues such as funding and staffing will not be included in the main body of research. Many of these issues, however, are considered in Appendix B.

## **Literature Review**

This review of literature is organized thematically according to the tension areas explicated in the purpose section.

Searches for academic articles were conducted by keyword submissions primarily through the Auraria Library database (ex., ‘teacher networks’, ‘school networks’). Articles were initially chosen based upon their general relevance to the topic. A more refined selection of articles was then derived from a snowballing method whereby articles were awarded a higher level of significance based upon the number of times they were referred to collectively in endnotes and bibliographies.

## ***Learning v. Collegiality***

Most of the early research conducted on teacher networks recognized this innate tension area as a primary point to address in order to be successful (Firestone & Pennell, 1997; Leiberman & Grolnick, 1996; McDonald & Klein, 2003). In this context, both concepts are highly vague. Here, learning essentially includes any type of knowledge transaction that is meant to improve a teacher's professional expertise. Conversely, collegiality represents a focus solely on relationships among network members and is most closely tied to alternative words and phrases used by researchers such as: solidarity among teachers; venting; safety and trust; psychological support; focus on partnerships and so forth. The term collegiality, for the purposes of this project, will be used as a catchall for this myriad of very similar terminologies.

Research shows that networks that focus on relationships among teachers first are more successful than ones that neglect this aspect (Leiberman & Grolnick, 1996). In order to establish a sustainable foundation among members, time and financial support should be devoted to activities that build trust and common identity (Mitchell, 2003). In networks, many teachers perhaps experience for the first time that their professional identities and interests are shared and valued (Leiberman & Grolnick, 1996; Niesz, 2007). In such a case, networks can be a refuge where teachers can vent frustrations and seek relief (Dresner & Worley, 2006). This prospect is very attractive for teachers and becomes the baseline for intrinsic motivation and idea sharing (Leiberman, 2000). The emphasis within networks is placed initially on collegiality because of the popular expectation that discourse will naturally shift toward students and other aspects of their work over time (Sawchuck, 2008; Niesz, 2007).

Networks should always be mindful of the learning aspect, keeping discourses relevant to issues of practice. Strong networks employ a mixture of strategies that promote collegiality *and* professional learning (Dresner & Worley, 2006; Swenson, 2003). If the details of the learning agenda are unclear, a network must instill at the very least a clear vision of change (Dresner &

Worley, 2006). Teachers always respond well to the sense of community, but the coupling with professional progress is what keeps them committed (Leiberman, 2000). A study conducted by Penuel and Riel (2007) showed that networks that do not have substantive learning agendas- ones that are merely ‘social clubs’- often become venues for damaging gossip about students, other teachers and administration.

McDonald and Klein (2003) point out that most studies about teacher networks examine how members experience them but not what they actually do. These authors recommend more research that will illuminate the details of network activity and how they connect to changes in practice.

### ***Content v. Pedagogical Knowledge***

In this tension area, networks struggle to find reconciliation regarding the types of learning they choose to emphasize. Content knowledge is a general term that primarily includes: curriculum/ subject knowledge; procedural knowledge (lesson plans, classroom management, etc.); and discrete/ technical knowledge. Alternatively, pedagogical knowledge involves the broader questions of the teaching practice, demanding self-reflection and abstract conceptual inquiries about teacher-student roles and even epistemology. McDonald and Klein (2003) make a pithy distinction between the two: content knowledge can be viewed as knowledge of subject matter and protocol while pedagogical knowledge is knowledge of the ways students develop their own understanding of the material and how to help them do so.

In their study of two state-sponsored teacher networks in Vermont and California, Firestone and Pennell (1997) found that a network focusing primarily on transferring content knowledge was beneficial for beginner teachers but not experienced ones. These content-based

programs were mainly characterized as rigid professional development-type programs meant to economically convey concrete ideas. The authors' model network, California Subject Matter Projects, mixed both knowledge types in its programs and informal activities. They observed that experienced teachers also benefited by being introduced to and challenged by new conceptual teaching strategies. The authors offer important advice stating that government-sponsored networks should cautiously focus more broadly on teacher capacity-building than policy-supporting agendas- this implies a need for conceptual emphasis.

Leiberman and Grolnick (1996) offer, in defense of content-type knowledge, that the network agenda must always emerge from the members' work; therefore, it is vital not to lose sight of the day-to-day practice. Teachers of sciences, whose content areas are often very technical, seem to especially benefit from content-based network programs. In the Teachers in the Woods program (TIW), high school science teachers work with experts to receive training in ecological field research protocols (Dresner & Worley, 2006). For the first time many of the teachers receive training in both up-to-date content and processes of sciences. TIW is also exemplary for its ability to offer content knowledge while retaining strong and equal relationships among teachers and expert practitioners.

Ultimately, networks that succeed and grow employ a mixture of content and pedagogical knowledge in their programs and overall strategies (Leiberman, 2000). Neisz (2007) provides an important perspective positing that content knowledge should not be fully eschewed in network discourse, however, networks are naturally conceptual because they are driven by teachers who desire to step outside of the system and see their practice in a larger social context. The challenge now is creating the structural support for feeding pedagogical insight back into the classroom (Penuel & Riel, 2007). Support from school administration and ample time for idea sharing are

necessary factors for teachers to explore and utilize new teaching philosophies (Chrispeels & Burke, 2003; Penuel & Riel, 2007).

### ***Delivered v. Constructed Knowledge***

Though not necessarily a complete departure from the preceding distinction, this tension area primarily examines knowledge sources, not types. Delivered knowledge in its pure sense is that which is prescribed, preplanned and presented to network participants with little to no reciprocity. This method is largely associated with traditional professional development techniques within hierarchical social structures. Constructed knowledge is defined by egalitarianism and spontaneity; network members interact without clear premeditated direction and leadership.

A tendency toward a constructivist approach is inherent within most present-day networks (Niesz, 2007). After all, the origin of most networks is based upon circumventing if not changing traditional institutional roles and hierarchies (Lieberman & Grolnick, 1996; Unda, 2002); historically, bureaucracies deliver ‘one-size-fits-all’ knowledge that ignores differing learning contexts and teacher experience levels (Lieberman, 2000). Opportunities for leadership and helping to determine the course of a network agenda are undoubtedly the most attractive features to the majority of members- or prospective members. When they take a role in constructing the learning agenda, the work ‘becomes their own’, fostering commitment, trust and professional improvement (Lieberman & Grolnick, 1996; Niesz, 2007). As views on education transform, the teaching role is changing from an ‘implementer of curricula’ to something greater (Unda, 2002). In the Teachers in the Woods network, science education is viewed in the context of citizen engagement, not as a concrete body of facts (Dresner & Worley, 2006). This strongly suggests a

model of open-ended constructivism where teachers can adapt these ideas to the uniqueness of their classrooms (Dresner & Worley, 2006).

On the other hand, there are difficulties with constructivism that almost always require some degree of structured delivery. Egalitarianism can itself be a source of deep tension among participants (Leiberman & Grolnick, 1996). As network programs and discussions evolve, experienced leaders emerge and normative structures form, if not rather casually. Naturally, some members fall into roles mainly as receivers of delivered knowledge. This is a healthy aspect of the social interaction and suits the needs of different teachers with different levels of experience. Over time, successful networks inculcate a variety of established norms into new members because they ‘work’ and promote solidarity (McDonald & Klein, 2003). Delivery also helps to minimize ‘shared ignorance’ (Leiberman & Grolnick, 1996). A culture emphasizing equality can fail to make distinctions among the quality of ideas in regard to pedagogy, rendering nothing but a sea of unremarkable propositions. When networks recognize and collect strong ideas over time, some degree of delivery becomes a prudent strategy.

According to all reviewed research, a mixture of both strategies is ideal for meeting the needs of teachers with various experience levels and maximizing motivation and network sustainability. The balance, of course, can be tricky. McDonald and Klein (2003) ask, “How do networks provide new ways of knowing and validate teachers’ ways of knowing at the same time? How does one improve teacher capacity without implying incapacity in a way that proves debilitating?” Among 16 networks observed by Leiberman and Grolnick (1996), model networks had formal leaders but allowed many opportunities for leadership roles among members. The National Writing Project refers to this as the ‘third space’, where “the teacher is neither overtly a teacher nor student but ends up as both” (Swenson, 2003). Referring again to the state-sponsored networks examined by Firestone and Pennell (1997), delivered programs-which they associate

with content knowledge- were beneficial for new teachers, but not beneficial and often offensive to experienced teachers. This is an important caveat for all networks, especially state-sponsored ones: a network should base its reconciliation of this tension on its overall goals and membership culture and not on compromising influences like government policy (Niesz, 2007; Firestone & Pennell, 1997).

### ***Outside v. Inside Knowledge***

This tension also regards knowledge sources, only more broadly. A network that utilizes outside knowledge brings in ‘teaching 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.

Traditionally, outside knowledge is associated with the delivery of rigid professional development programs- ‘events’ mandated by someone other than a classroom teacher (Swenson, 2003); too often, passive teachers were developed by outsiders without feedback and reference to the ‘real’ problems encountered in the classroom (Leiberman, 2000; Hofman & Dijkstra, 2010). Teachers within modern networks, especially those deeply vested in their interests, frequently take strong positions concerning the knowledge sources that inform network activity (Leiberman, 2000). Because networks are naturally inclined to a reactionary form of constructivism, impassioned members may find outside prescriptions to be imposing, offensive and patronizing. Moreover, outside knowledge insensitive to the varying needs of teachers can leave some overwhelmed and others unchallenged- benefiting no one (Firestone & Pennell, 1997).

The use of outside knowledge can be advantageous when executed wisely. Outside knowledge can be a solution to insularity and the ever-present challenge of shared ignorance

(McDonald & Klein, 2003). According to the Penuel & Riel (2007) study, recognition of and ties to experts made the biggest difference in teacher learning and transformation. Although networks should continue to foster strong relationships among members, access to these ‘weak ties’ is most beneficial for learning (Penuel & Riel, 2007). Furthermore, it is also possible to incorporate the use of expert practitioners without a fully delivered approach. Again, the Teachers in the Woods program is an example of teachers experiencing fieldwork without being simply lectured to (Dresner & Worley, 2003). Teachers were ‘given’ knowledge of their subjects by field scientists but they were encouraged to use their own experiences to help turn skills of the field into valuable curricula.

The McDonald and Klein (2003) question is relevant here: “How do you improve capacity without implying incapacity...?” Differences such as culture, size and depth within networks mean a variety of successful strategies for incorporating outside knowledge. According to Leiberman and Grolnick (1996) and Mitchell (2003), a better alternative to rigid stances on outside knowledge might be to offer expert support on a purely voluntary basis. It is important to note that the ‘experts’ in the Penuel & Riel (2007) study are not necessarily outside of the network; indeed, they might be- and probably are- many of the network members themselves. This implies that some networks possess the means of accomplishing their learning goals without external sources. Of course, the line between inside and outside is innately blurry in networks. In any case, the authors emphasize the importance of “making effective expertise visible”, wherever it may come from. Ultimately, the goal is to increase the ‘social capital’ of the network by tapping into as many sources as possible while cultivating knowledge within (Penuel & Riel, 2007). Mitchell (2003) calls this the ‘intellectual space’. Swenson (2003) suggests that if information on successful school reform is valid and reliable at the local level, broader educational constituencies

will adopt similar changes. More research is needed in identifying successful strategies for visibility and dissemination of expert knowledge.

## **Methods**

The primary research portion of this study was entirely conducted through telephone interviews. Google search engine was used to generate keyword searches and pinpoint candidate networks. Networks with active websites were examined and analyzed according to their purported models, levels of success, and potential relevance to a statewide network of AP teachers. Here is set forth a basic formal criteria: 1) It must fit the definition of a teacher network explicated in the introduction; 2) It must retain a certain level of intimacy that might resemble the population limits of a statewide network; 3) It must purport a level of energy that suggests ongoing frequent activity and, possibly, plans for future growth; 4) It must have a coherent purpose or vision that identifies and unites the network; and 5) It must primarily target teachers in the subject areas of math, science and English, the most populated AP subject areas- and of most interest to the client; and at least at the middle school level.

Initial e-mail inquiries were sent out to network representatives to determine willingness to participate. As a supplement to these inquiries, a detailed interview questionnaire was prepared and delivered to those who showed initial interest. This served as a helpful device for filtering out any organizations or representatives who might not be able to speak fully to the issues. A detailed outline of the interview structure is available as Appendix C.

Interviews were conducted with the following organizations: 1) Wisconsin Environmental Science Teacher Network; 2) Teacher Leaders Network; 3) Math Teachers' Circle; 4) Bread Loaf Teacher Network/ BreadNet; 5) California Teacher Empowerment Network; 6) National Teacher

Enhancement Network; and 7) Jerry Overmyer, creator of the Colorado Mathematics Teachers Network and the Teacher Vodcasting Network based in Woodland Park, CO. A more detailed explanation of these networks, their representatives, and links to their websites can be found in Appendix A. Each interview generally followed the standard interview structure with only marginal deviations for ease of dialogue and averaged around 45 minutes. All interviews were voice-recorded for ease of information retrieval.

The results will show that only four of the seven interviews were used to illustrate the tables. It was determined that these four networks were most exemplary in speaking to the relevant issues and represented models that might most inform Colorado Legacy Foundation in a sophisticated way. Networks that were not chosen as table illustrations either primarily served purposes that were too unrelated or specific to inform a proposed AP network or did not possess sufficient well-rounded experience to provide insight in these substantive tensions areas. Alternatively, insight from *all seven networks* was used to fortify and enrich recommendations in the conclusion and additional developmental recommendations found in Appendix B.

## **Results**

See tables at end of document.

## **Conclusion: *Suggestions for Effective Design***

In light of this project being client-centered, the conclusion will take an unconventional approach to be as serviceable as possible. Within each tension area addressed, generalized pithy suggestion statements will be posited, each followed by a detailed description.

## *Learning v. Collegiality*

- *Above all else, foster relationships first; trust and bonding are the foundations to learning and longevity.*

Each of the model networks does this well, despite doing it in very different ways. WESTN has its summit; MTC uses workshops and team problem solving; TLN's devoted staff facilitates a culture of sharing and keeps the network small and intimate; and Bread Loaf brings teachers together to live and learn in its summer programs and preserves long-distance partnerships through its discreet BreadNet platform.

This suggests that there is a great deal of freedom in devising ways to solidify relationships among a newly acquainted corpus of AP teachers in Colorado, but to neglect the process altogether is fatal. The relationship-building process contributes to a variety of things. Initially, it builds trust. Without trust, there is no path to learning and participation. Second, positive relationships keep teachers motivated to continue to interact. Interviews with WESTN and MTC notably mentioned that teachers were willing to incur the burdens of travel because they were excited to see their colleagues, who had in fact become good friends. Third, strong relationships perpetuate network energy and foster growth.

- *Endeavor to incorporate both online and in-person contacts to maximize collegiality and learning, especially for an in-state network.*

Of all four model networks TLN has succeeded in creating meaningful relationships among its member teachers without an investment in in-person contacts. Their administrative and

financial devotion to the network has generated a perception of commitment among its members; the online platform is discreet, easy-to-use and attempts to cater exactly to teachers' needs. Furthermore, the virtual community organizers are cautious about the size of the network- wanting to keep the experience intimate- and make strides to connect teachers with similar interests.

Conversely, several of the networks interviewed lamented that they wish they could plan more in-person contact among teachers, confessing that it is preferred but often an unattainable luxury. In light of the geographic advantage of a planned in-state network of AP teachers, I recommend in-person interaction when possible to enhance the process of relationship building. It would be worth conducting an informal study in determining *where, when and how often* congregation should take place in order to maximize attendance according to the specifics of this network proposition. For those individuals who want to stay connected but simply cannot participate in in-person sessions, it is a great idea to provide detailed online summaries of events including, possibly: what was accomplished and any positive feedback given by participants.

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

The easiest way to get anyone to learn is to make it fun and interactive. Teachers have been trying to do this for years with their students. But teachers are subject to the same forces themselves, are they not? WESTN and MTC do an especially good job of finding a natural confluence of learning and bonding, which suggests a model for adapting to the high school classroom. WESTN includes a day of field experience during its yearly Summit to get teachers outdoors, in canoes, and in the woods to keep learning fun. MTC employs its team-approach

philosophy of problem solving in its workshops to simultaneously foster friendships and learning among teachers.

- *In face-to-face interaction, use learning blocks to relieve any perceptions of burden; in online interaction, clearly design virtual space to keep discussions focused.*

WESTN, for example, uses a pre-planned time schedule to which it adheres to during its Annual Summit. Although the learning is engaging and interactive, WESTN ensures that focus remains on learning by clearly identifying (apologies for the crassness) ‘learning time’ and ‘social time’. The interviewee suggested that teachers want to stay focused on the learning objectives during those scheduled times because of the understanding that other time is deliberately set aside for socialization (i.e., an evening campfire gathering and meals).

TLN and BreadNet are exemplary models in how they design their virtual spaces to foster relationships and guide learning. They both have a general forum where essentially no topic is off-limits: TLN has TLN Forum; and BreadNet created CyberBarn. These spaces host a variety of discussions, mostly focused on topics of pedagogy and so forth. However, these spaces *can* primarily function as refuges and outlets where teachers feel encouraged to vent about practically anything. These are essential for fostering the personal relationships of network members online.

Conversely, TLN and BreadNet designate other spaces on their sites devoted to specific learning endeavors: TLN has teacher solution groups and mentoring groups; BreadNet primarily has conferencing. These virtual spaces most importantly suggest a character of ‘all business’ where teachers go specifically for absorption of or contribution to pointed topic discussions. These clear designations are necessary for users to know exactly what they are committing to as they utilize these sites.

## *Pedagogy v. Content*

- *Use demographic knowledge of the network population to target the emphasis of knowledge type.*

In almost every conversation, the interviewee has observed that, of each general area of knowledge, it is content that teachers lack the most. And indeed, as the NTEN representative put it, if teachers are only one step ahead of their students in content knowledge, then they cannot help them to make the broader connects necessary for a rigorous education. Of course, the stakes are even higher in AP classrooms. The content is more challenging and the students are more demanding.

In their beginnings, all of these networks went through some process of research gathering (generally informal) to determine the knowledge void in which they were intended to fulfill. WESTN, for example, initially established an advisory board to determine the level of interest there was in the state for an environmental science content-based network.

It is, of course, not necessarily the case that an AP network should be primarily content-based according to these statements but it should be taken under serious consideration. Another reason for this is because of the huge range of AP courses available. If initial research shows that there is too much incongruence in what pedagogy looks like for specific subject areas and agreement on overlap cannot be achieved, I recommend starting with a network pilot that targets only one subject area (a populated one). From there, the network can usher in new subgroups according to its capacity and anticipation of interest. It is advisable to spend the time in preparing a potential network to find out who the teachers are, what they want and what they have in

common. This recommendation extends beyond the discussion of knowledge type; it also informs each of the other tension areas.

- *A clever way of reconciliation is to 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 with little problem. 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 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?” And thus, without effort, they experience a comprehensive balance of teaching knowledge.

- *An online network interface can kill many birds with one stone; teachers can use the network site itself to expand their pedagogical repertoire.*

Web-based networks traditionally allow teachers to share information that contributes to both content and pedagogical expertise. BreadNet serves as an example of how teachers can use the network sites themselves to conduct classroom learning in innovative ways. Cross-classroom writing projects coordinated by Bread Loaf teachers through BreadNet offer an exciting way for students to interact with distance students in writing projects. And so, teachers can use network sites not simply as venues for discussing how to teach but to teach itself!

Online teacher networks also have the potential of hosting powerful congregations of teachers who wish to affect policies relevant to the teaching practice. CTEN is specifically devoted to using its networking capabilities to provide its listserv with detailed and unbiased information regarding policies on all governmental levels that affect the work of teachers. TLN fosters policy analysis and recommendations to its members through its policy groups and publishes the work of these groups. To note here, because AP teachers must subscribe to a standardized curriculum established by the College Board, a network could function as an ideal vaulting point for teachers who wish to have a collective impact on content decision making.

- *Subgrouping, especially in a web-based format, is a powerful device for precisely targeting teachers' needs and preferences, but timing is everything.*

Careful website planning can mitigate more than just tensions between learning and relationship building; it can precisely cater to the needs of teachers with varying knowledge strengths. TLN distinguishes its virtual spaces to neatly conform to the preferences of teachers. The design allows teachers to decide for themselves where they want to participate, wisely avoiding the mistake of the one-size-fits-all philosophy that marked traditional professional development techniques. Teachers can navigate the TLN Forum in which they might engage in discourse relevant to all species of knowledge. Furthermore, a diversity of policy solutions groups and mentoring groups offer options for teachers in their various knowledge pursuits. The TLN model is a powerful informer for a projected online-based AP network. Sophisticated subgrouping will certainly be a necessary device for targeting the specific needs of AP teachers in different subject areas, while a general forum can breed cross-subject discourse that illuminates overlapping pedagogical knowledge.

This type of *subgrouping* is an essential strategy for a network, but it must be executed in a timely way. Why? Subgrouping too soon or too late both lead to feelings of confusion and isolation among members. Without a strong consistent level of activity from a populous network base, virtual subgroup spaces can very easily become stagnant as contrived categorized discussions become sparse- and then even sparser as perceived stagnation ensues. Subgrouping too late has an equally detrimental effect. The growing number of participants in a common virtual space eventually becomes too unorganized and overwhelming; teachers again feel isolated in this ‘overly-crowded room’ without any focused or intimate connections. TLN and BreadNet are both exemplary models for solving this problem. Each have at least one devoted staff person facilitating and mediating discourse and, by being deeply immersed in the process, can detect where interests lie and make sophisticated decisions about subgrouping.

### ***Delivered v. Constructed***

- *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. Because circumstances are different for every teacher, their preferences will vary. Thus, each network is responsible for developing the mechanisms necessary to ascertain their network’s unique body of needs without making sweeping generalizations. 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. This strategy should not be underestimated.

Being fully responsive to the needs of teachers does not necessarily lead to the directionless servitude of the network in a constructivist way. Teacher input might express to the network that further delivery is needed. Many teachers- many- join networks because they want to simply take a learner's role and thus allow a high degree of guidance from the network. But permission is the key. And permission from teachers is given based upon trust. Trust is primarily cultivated by the experience, professionalism, commitment, and coherent vision of the network; and inter-network relationships. These factors are apparent in all model networks evaluated.

The teacher-driven philosophy also informs how a network might stratify itself in other ways. Teacher input will indicate whether or not they feel benefited by cross-subject collaboration. A fledgling AP network should be open to the idea of constructing a network that divides programs and ongoing activities according to subject area. To this end, the network should ensure that it has the resources to support these anticipated entities both separately and collectively.

- *Organize deliverable resources in a simple online archive.*

One way to effectively utilize a network website is to create a body of relevant information that can be accessed by network members whenever they choose. WESTN's Digital Resource Library is a simple and organized stockpiling of references and links to information related to teaching in the Environmental Sciences field that teachers can browse on their own terms. According to the interviewee, this has been the most used and liked aspect of the site. WESTN also posts a detailed summary of past Summit activities and a core course framework (2) that teachers can extract ideas from and adapt to their own classrooms. BreadNet's website includes a personal archive folder for each individual member from where they can access and review past conferences both private and public.

This idea of archiving information for the network to access is beneficial in a number of ways. First, it is a precise tool for catering to specific teachers' needs (but it must be coherent and navigable). In an AP network, one might imagine an archive that includes: curriculum resources of the College Board; resources about preparing students for AP examinations; information related to NMSI and APTIP; and, if necessary, a system of categories for the subject-specific need areas. Second, it allows teachers to learn discreetly, eliminating any reluctance teachers might have in requesting help. Third, it can provide an opportunity for teachers to contribute their own resources, further investing them in the networking process. Last, an archive can be used to document and refine the evolution of the network.

Of course, this mechanism cannot fully circumvent the tension between delivery and construction. A network is still left with many serious questions such as: *should the administrator be able to filter archive posts to ensure quality or should they let it be an open forum? And what assistance is there if teachers are having trouble interpreting what they are reading?* These are important questions that cannot be easily answered.

- *Use voluntary mentoring mechanisms to precisely target needs.*

All model network evaluated utilize mentoring- or coaching, or some other version of the concept- to enrich its programs: WESTN and Bread Loaf use their strong insights about their members to link experienced teachers and new teachers together in a sort of tutelage; Math Teachers' Circles develop natural mentoring relationships in their teamwork environments (experienced teachers often work with mathematicians to co-plan circle sessions); and TLN believes it is so important that it devotes much of its online platform to establishing robust

mentoring groups. Like TLN, an AP network should consider naturally linking AP mentors and learners according to subject area.

Both informal and formal mentoring relationships provide a host of benefits. Above all, mentors are ideally sensitive to the needs of inexperienced teachers and can address both the professional and emotional challenges. After all, being a new teacher is scary. This type of relationship is very strong and both invests the mentor and the learner more deeply into the network. Furthermore, trusted and respected mentors become natural mediators and facilitators throughout the network. This can help streamline the learning process, fortify the core beliefs of the network, and reduce the need for administrative intervention in activities.

- *Reward progress and exhibit accomplishments to empower learners.*

Many teachers begin their network participation preferring unequivocally 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. All model networks evaluated produce this transformation in many members because of their commitments to relationship-building and professional learning.

Some networks go further and make special efforts to celebrate accomplishments and disseminate these throughout the network. BreadNet gives teachers many opportunities to showcase their expertise throughout the network by publishing their work in reports, wikis and e-portfolios. NTEN targets exceptional teacher scholars in their programs and encourages them to become mentors for other teachers or ambassadors for the school (called NTEN champions). TLN

publishes the work of its policy and mentor groups within the network and on blogs. These strategies empower teachers by recognizing their newly acquired capacities for leadership within the network. For the first time, many recognized teachers feel that they have graduated from the singular role of the learner into a contributor of the construction of network knowledge.

### ***Outside v. Inside***

- *Always ensure that teachers feel in control of their learning.*

Networks that balance the use of outside expert knowledge well emphasize and retain the view that all network activity should be teacher-driven. TLN often brings in content experts to enrich conferencing discourse in webinar sessions but structure the sessions to express that teachers are in control. Experts typically give brief ten minute presentations followed by at least an hour of teacher-driven open conversation. In such cases, according to the interviewee, teachers welcome the inclusion of outside knowledge as it is used as a tool simply to inform a broader dialogue. WESTN takes a similar approach to its use of experts in Summit meetings. Furthermore, WESTN uses field experts and university affiliates to inform its evolving core ES course framework, developed within the network by its members. The network emphasizes the importance of a teacher-centered framework development by exclusively entrusting the formulation process to the hands of the teachers while using experts only in the review phase. Almost every network interviewed gave some version of a common refrain: “when it comes to the classroom, we believe that teachers are the real experts”. This philosophy informs a healthy balance of outside and inside contributions. Allow the teachers to take the lead while bringing in expert knowledge cautiously and prudently.

- *Utilize referrals to target experts with ‘teaching skills’.*

MTC notably lamented about the difficulty of targeting experts with some level of teaching experience or, at minimum, strong communication skills. Because the MTC learning model is built around the mathematician-as-leader idea, it is crucial for the math expert to be able to relate with teacher participants well. Unfortunately, some mathematicians do not possess these skills. Most mathematicians who are eager to participate as circle leaders self-identify as strong teachers and collaborators, and, therefore, the problem is marginal. However, MTC is cautious and uses its broader networking might to pinpoint practitioners with comprehensive skills in math and teaching. Similarly, each of the other model networks interviewed expressed the importance of exploiting their broader networked institutional affiliates to increase their capacities to recruit ‘good’ experts. The ideal strategy for negotiating this particular tension area is to dissolve the stigmatic perception of outside and inside altogether. The network accomplishes this by incorporating experts that understand the teacher’s role and purport to abide by it.

- *Cultivate in-network knowledge to progress toward self-sufficiency.*

It is difficult to gauge whether teacher networks generally feel inclined to purge themselves completely of outside knowledge dependence or if they find it always beneficial. Simply by logic one can conclude that as a network grows and cultivates the expertise of its own members, greater expert knowledge is available within the network. This is almost always desirable, but as the network itself becomes more robust and attracts new talent, it must remain cognizant of both the positive and negative effects of growth in quantity and quality. We know the positive ones, but

there are negatives as well. For instance, networks with a high degree of internal expertise might seem intimidating and uninviting to novice teachers who want to absorb information. The network should always ensure that its internal expertise is used primarily to service learning and that it retains a culture of reciprocity.

## Endnotes

1. The Wisconsin Environmental Science Teacher Network has had two annual summits starting in 2008. The 2009 summit was held in the summer and brought ES teachers from all over the state together for the two-day event. Day one was devoted to field experiences where teachers learned skills in areas such as forestry and wildlife tracking. Day two focused on classroom lessons; a field expert gave a presentation on biofuel sustainability and teachers shared classroom experiences. Within these learning blocks, teachers were given time to socialize, especially during meals and a campfire social held in the evening. Overall, teachers felt that the experience strengthened their sense of support and partnership with other ES teachers; improved their professional expertise; and broadened their network of content resources. A comprehensive summary of the weekend and its outcomes was published on the network website for public viewing.
2. The Environmental Science Course Framework was developed (and continues to be) by experienced ES teachers associated with the network and was reviewed by field resource professional and university professors. The Framework was created because of the recognition that many teachers of the environmental sciences neither had the background nor the necessary reference resources to connect field knowledge and classroom curriculum. The Framework is comprehensive in that it covers the core themes and concepts and suggests the order in which they might be taught. The network highly encourages feedback from teachers on how the core Framework might be improved.
3. Digital Resource Library is an online resource that ES teachers can access through the network website. It provides an open venue where teachers can freely access resources- mainly related to content- and post their own. According to the Ms. Buchholz, the Library has been used to a surprising degree, owing its success to the simplicity of the format and the teachers' desire to improve their practices.
4. Startup workshops are staged by the central Math Teachers' Circle administration to prepare potential new circles for success and to galvanize the conception of circles throughout the US. Starting in 2007, startup workshops bring together teams typically composed of 2 mathematicians, 2 math teachers and 1 school administrator to collaborate and develop a 'business plan' for their proposed circle. Their planning must be comprehensive; everything from content to long-term fundraising must be negotiated and anticipated for circle sustainability. This initial contact among teams creates the foundation for strong bonds and the collaborative problem solving philosophy core to the network. The American Institute of Mathematics- the creator and patron of the network- helps to stage these workshops and pays for travel and meal costs of participants.
5. Immersion workshops for new local circles are highly encouraged by the national-level network. Typically these workshops are held in the summer and bring together circle members for the first time for 4-5 days of math problem solving activities and socialization.
6. TLN Forum is the largest single community on the site, hosting around 300 members. The purpose of the forum is to be an open space where teachers feel free to discuss more or less

whatever they would like to discuss. Conversations cover a huge range of topics; TLN utilizes this undirected space to cultivate open sharing and partnerships among teachers.

7. Teacher solutions groups are those that study education policy(s). These groups are deliberately smaller- 12 to 20 members- and new members can only join by invitation. The fruit of the work of these groups is generally a policy brief providing solutions, recommendations and any other vital information that teachers should know about policies examined. Often times, their work is published on blogs accessible to the public.

8. Mentoring groups are also generally small and restricted by invitation but can exceed 100 in some cases. In these groups, expert teachers coach mainly new teachers and teachers seeking national board certification in a variety of areas. Mentor work receives publication as well.

9. BreadNet is the primary online networking tool connecting teachers who receive education from or have graduated from Bread Loaf School of English. It began in 1984 using available telecommunications technology as a supplement for teachers who finished their studies at the school and desired to stay connected to the intimate Bread Loaf community; many of these teachers serve in rural areas with little potential for collaboration, from which BreadNet functions as a lifeline. Today, BreadNet is a comprehensive easy-to-use private web-based platform that connects teachers instantaneously to other national and international Bread Loaf members (their accounts are complimentary). Teachers use the site for a variety of purposes. The 'CyberBarn' is a venue on the site for teachers to make general contacts, post and reply to discussion ideas, request advice and coordinate conferences. Teachers also use the site to coordinate cross-classroom projects.

10. BreadNet conferencing is a major aspect of the site. Member teachers initiate conferences themselves and must submit conferencing proposals to an assigned Bread Loaf administrator who reviews the proposal to ensure that it meets explicit standards. Essentially, there are two types of conferences: public conferences allow other BreadNet members participate at-will; and private conferences are confidential, typically involving only two members. Sometimes mediators are used in conferences to ensure standard compliance and general facilitation. The CyberBarn is the main venue where teachers coordinate and plan conferences with one another.

11. Cross-classroom projects are also coordinated primarily through the BreadNet platform. An example of a cross-classroom project might include two 9<sup>th</sup> grade BreadNet teachers, one from Mississippi and one from Alaska, coordinating their curriculum so that their students have a chance connect with one another in regards to Shakespeare. As students from one class complete essays, the teacher will submit them online and have the distance students read and provide feedback. Bread Loaf teachers find that this is a powerful method of engaging students in reading and writing; students tend react to peer feedback in a more positive way than teacher feedback.

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# Appendix A

## *Description of Interviewees*

**Bread Loaf Teacher Network** is part of the Bread Loaf School of English, a summer program since 1920 targeting primarily high school English teachers. The teacher network branch is a support program for teachers educated at Bread Loaf in ongoing professional development.

**BreadNet**, established in 1984, is the central web-based hub connecting Bread Loaf teachers throughout the US (telecommunications, later, online). Teachers use BreadNet to seek and provide additional developmental support and have the opportunity to involve their students in cross-classroom online writing projects.

Caroline Eisner is the primary administrator for BreadNet.

<http://www.middlebury.edu/blse/bltn/>

**California Teachers Empowerment Network** was created in response to the lack of balanced and credible information related to education policy available to teachers. The purpose of the network is to circumvent the information monopoly of the National Education Association and its state and local subsidiaries and provide an independent and reliable source of information to teachers on a range of issues that affect them professionally. Teachers are connected through a statewide listserv.

Larry Sand is the founder of the network.

<http://www.ctenhome.org/index.htm>

**Jerry Overmyer** is the Outreach Coordinator for the Math and Science Teaching Institute (MAST) based at the University of Northern Colorado. Jerry is also the creator of two startup networks: the Colorado Mathematics Teachers Network; and the Teacher Vodcasting Network. The Colorado Mathematics Teachers Network is a web-based network where teachers throughout the state can participate in and create discussion threads and view video resources. The Teacher Vodcasting Network is a webpage dedicated to collecting and organizing teaching instructional videos submitted by classroom teachers (think: YouTube for teachers).

<http://comath.ning.com/>

<http://vodcasting.ning.com/video/video>

**Math Teachers' Circle** was established by the American Institute of Mathematics to give local math teachers opportunities to meet and practice mathematics-based problem solving together. The network is comprised of a number of regional independent subgroups that meet in person throughout the US. The central network administration selects circle leaders (typically expert mathematicians associated with AIM) and provides general guidance in network activities and procedures.

Brianna Donaldson is the Director of Special Projects at the American Institute of Mathematics and the primary administrator of the network.

<http://www.mathteacherscircle.org/>

**National Teacher Enhancement Network** is primarily an online professional development program for teachers who want to further their education in science teaching. The program is an extension of Montana State University and serves teacher-students nationally and internationally. While the program is centered on traditional online course work, NTEN takes a progressive approach by connecting students with their colleagues in a variety of ways and using an inquiry-based style that mirrors the classroom.

Lisa Brown is the Elementary Project Coordinator for NTEN.

<http://eu.montana.edu/nten/about/>

**Teacher Leaders Network** is a nationwide teacher network started by the Center for Teaching Quality focusing primarily on web-based interaction among members. The network's flagship feature is a comprehensive private web platform that is moderated by selected expert teachers. Teachers can engage in active and organized discussion ranging from education policy to classroom management.

Melissa Rasberry is the Director of Program Management at the Center of Teaching Quality.

<http://www.teacherleaders.org/home>

**Wisconsin Environmental Science Teacher Network** was created by and receives continual support from the Wisconsin Center for Environmental Education. Its purpose is to provide a way for teachers of environmental science (7<sup>th</sup>-12<sup>th</sup> grade) to connect and grow professionally and to develop a working curriculum framework as a vaulting point for all ES teachers. Teachers interact with field practitioners and participate in an annual summit as part of a comprehensive strategy to improve ES teaching throughout the state.

Sunshine Buchholz is an Environmental Education Specialist and the primary administrator for the network.

<http://www.uwsp.edu/cnr/wcee/EnvSci/index.htm>

## Appendix B

### *Additional Developmental Advice*

#### **Start-up**

- *Establish an advisory group to formulate purpose and determine interest level, among others.*

I recommend establishing- at least initially- a body of appropriate representatives to generate ideas about starting and maintaining a proposed network. Representation is a vital aspect of this ‘advisory group’. CLF should consider all of those who might have a vested interest in an AP network to participate in the group. MTC generally tries to bring together two teachers, two mathematicians and a school administrator to form comprehensive, representative teams in start-up workshops. These teams work together to discuss- and tentatively finalize- a range of issues from content to funding plans. WESTN’s initial advisory group was very beneficial for their purposes. They staged a summer conference inviting ES teachers from all over the state to conduct a ‘visioning session’ for the network. They tried to ensure that they had proper representation by involving teachers of all types: rural, urban, veteran, and so forth. They were able to identify many of the core needs that a network should address. This list of needs is something that they refer to as an ongoing practice to inform the network’s efforts.

These are some possible questions that you might consider: What are the characteristics of AP teaching that suggest the need for an independent network? What is the current policy landscape and how does it affect the practice of AP teachers? What are our obligations to CLF, NMSI, and the College Board?

- *Make your restaurant appear crowded.*

One myth reiterated by several interviewees is: if you build it, they will come. This simply is not the case. In my interview with Jerry Overmyer, he mentioned a useful analogy. When downtown restaurants and bars are trying to get over that initial hump, they will often pay people to simply be there in order to create crowds and energy. Otherwise, people will not come; it is a perpetual cycle. Networks are the same way. To use another analogy, you have to put the cart before the horse. Start with a small, devoted group of people (possibly an advisory group) who are willing to put in a lot of time to get the network off of the ground. If you want to build a website, encourage the core devotees to regularly contribute to discussions and commit at least one staff person to moderating the site often and effectively. TLN tracks member activity and requires a minimum level of discussion participation in order to retain membership (some members prefer to be ‘lurkers’, those who like to navigate the site and read what others post without contributing themselves- this minimizes that behavior). Basically, create a perception of energy and activity to prevent atrophy.

Furthermore, it is worth the time and effort to research the level of potential interest there might be in a network. Even if your restaurant is crowded, you cannot keep up the pace if there is no one outside to witness it. All of the model networks interviewed prudently ascertain interest level before making any significant decisions in network development.

- *Use a variety of methods to disseminate but know that word-of-mouth is always the most effective.*

Dissemination should be used to peak whatever interest there might be. Use methods of dissemination that both reach a maximum number of the target audience and emphasize the positive aspects of the network. Networks tap into listserves; send out flyers and newsletters; and sometimes recruit teachers individually. These methods are cost-friendly and can generate a significant pool of interest. Word-of-mouth from almost all accounts is the primary method for recruiting new network members. Word-of-mouth has both its pros and cons. On one hand, it is difficult to control what information is being shared about the network and whom it is being shared with. On the other hand, the information is naturally positive, the right people are listening, and it requires no effort on behalf of the network itself. Furthermore, word-of-mouth primes relationship building because potential members are engaged in the testimonials of current network members and will likely enter into the network already having established some ties. A network can help guide its own word-of-mouth dissemination by pinpointing charismatic network leaders (maybe some who have really been transformed by the process) and encouraging them to be informal ambassadors of the network, attending conferences and speaking on behalf of the network when the opportunities arise.

### **Motivation/ Incentives**

- *Foster a diversity of intrinsic and extrinsic incentives for teachers to participate but cultivate the intrinsic primarily.*

Teachers will not participate in networks unless they are highly intrinsically motivated. Each of the interviewees expressed this point. Here are some notable statements about the networks: regarding WESTN: *Teachers participate because they simply love teaching. Many of them have a background in environmental science but are misunderstood or discouraged by their peers and supervisors to bring it into the classroom. The network is a chance to relate with others like them around the state. Teachers demanded more time for this year's Summit;* regarding MTC: *teachers generally participate because they really just love math and because they sincerely want to bring the model into their classrooms. But also, they want to see their friends and spend time together. It's an escape from the insularity of their school district; that's what makes it worth the trip. The mathematicians like it too. Many of them feel they are having a positive effect on the school system overall;* regarding TLC: *teachers think that the site is like the ideal virtual teachers lounge. It's a refuge from their daily lives because they can access it on their own terms, discreetly. And the teachers they talk to are from all over. Beyond that, the network is so professional that they feel they are really getting a personalized education;* regarding BreadNet: *It's a lifeline. These teachers spend all of this time together in their summer classes and then they go back home, sometimes to extremely rural areas where they might be the only English teacher in the school. This is how they stay connected to their friends and colleagues. Truly, they simply love what they do.* In order to generate this level of passion, the network must focus on relationship building while always developing expertise that is sensitive to the demands of teachers.

Networks survive because of the passion of their teachers but other motivators can be used to fortify active participation. Some networks offer certification and credit contributing to advanced degrees for participation in their programs. In planning face-to-face programs, it is also important

to consider the travel and time costs that might discourage teachers. MTC gives a small stipend to its teachers to help offset travel costs and seems to work well.

### **Additional technology considerations**

- *Listserves are a good start, but great networks think bigger.*

A listserv is a great tool for ongoing dissemination but it has obvious limitations. Above all, it is unidirectional and impersonal; it does not foster reciprocal discourse among users. In initially developing a network, start with a listserv but anticipate the need for a useful, integrative website.

- *Always consider the baggage that comes with incorporating new technology.*

With technology, consider the amount of lost time due to operation and possible confusion. The Teacher Vodcasting Network is attempting to connect teachers by allowing them to post online video classroom lectures in an organized archive from which teachers can use at will. Eventually, this technology will likely be seamless and effective for classroom use; however, it is currently met with some bewilderment. Much of the activity on the site is centered on technical inquiries on how to upload videos and so forth.

On the other hand, video technology can be used successfully and often is. The Wyoming Math Teachers' Circle finds it especially useful to connect its rural teachers for math problem solving through video conferencing software and, by the interviewee's account, is successful. Furthermore, TLN trains its mentor teacher how to transfer their classroom skills to a virtual environment and, likewise, Bread Loaf provides an introductory tutorial to new BreadNet users to familiarize them with the software.

### **Staffing**

- *Model networks can operate with minimal staffing requirements but ensure that there is at least one devoted person.*

All networks interviewed seem to do a lot with very little but with a few caveats. WESTN, MTC and BreadNet successfully function with only one primary administrator (all of whom do not devote their time fully to the network alone). TLN has approximately 5 staff with its private platform but began with only a single network facilitator. In any case, if there is to be only one administrator, it is crucial that that person has the capacity to be responsive to both the time demands and know-how (technology, knowledge of teaching, etc.) demands of the network members. Notably, TLN attributes much of its success to the fact that there was an individual present from the very beginning to facilitate and mediate all asynchronous discussion and purported to be highly devoted to those tasks; teachers responded very well.

- *Minimize staffing needs by letting the network administer itself.*

One can minimize staffing requirements by wisely organizing the network to perform tasks often assigned to staff. MTC ensures that their workshops are rigorous and comprehensive enough to launch new math circles that are self-sufficient entities. Circles develop their own

learning agendas and deal with meeting logistics independently. TLN utilizes its mentor teachers to facilitate as well as police discussions with little administrative intervention.

## **Evaluation**

- *Focus on changes in teachers as the basis for evaluation, not their students.*

Because of grant-related obligations, some network must perform evaluation based upon classroom impact, but this should be avoided when possible. Teacher networks clearly have an impact on the classroom but to what degree and in what ways are very difficult to determine in a scientifically rigorous way. The data are soft and there are too many variables that obscure the causal linkages between teacher network participation and the classroom. In developing compelling need-based arguments in grantwriting- as one example of the purpose of evaluation- the network should focus on changes in the teacher. A network might conduct a survey determining teachers' perceptions of the network and its impact on their professional development. Online networks such as BreadNet have tracked asynchronous discussions among members to determine any significant improvement in higher thinking skills. For most networks, measuring success based upon teacher transformation is a sufficient indicator of the health of the network and is compelling enough to secure various sources of funding.

- *Conduct a simple infrequent survey to gather network feedback from members.*

Among other practical methods for evaluating various aspects of the network, well-devised surveying might be the best. A survey might come in a variety of forms but, in any case, it should generate the type of feedback that is most useful for informing the network. Surveys should be comprehensive enough to cover the entire range of network issues that affect a teacher's experience but concise enough to not be too much of a bother. A reasonable period for surveys might be once a year. In conjunction with periodic formal data collecting, it is always advisable to create easy and accessible avenues through which teachers can voice feedback on *their* terms. This again comes back to committing staff, however sparse, to being available and responsive to teachers' needs.

- *You can benefit from free software like Google Analytics to illuminate website activity.*

There are free online tools that can help you retrieve some basic facts about a network website, assuming that money is tight. Programs like Google Analytics can show you which pages and links are being visited and for how long. You can use this tool in conjunction with other data retrieval methods to develop a cost-effective and rigorous evaluation system.

\* One final note worth mentioning here: MTC has found that some individuals in the academic world have expressed interest in conducting research on their network and are trying to utilize this as a service to the network. It might be worth using your connections with the university to recruit students to conduct a research project evaluating the network (not so different from this one).

## **Involving school administration**

- *Use administrative support cautiously; above all, don't lose the perspective that the network should be teacher-driven.*

Much like the tension areas that we have discussed, networks must carefully choose how to incorporate district administration. Incorporation has its advantages. School administrators supervise the work of teachers and, thus, their input can help align the content learning agendas of networks with district objectives. MTC tries to involve administrators in its start-up workshops for this purpose, among others. Administrative advocacy can also act as a recruiting device for new teacher members and a motivator for teachers who want to please their supervisors.

Conversely, most teacher networks are perceived by their members to be refuges from their daily work, which includes their administrators. These networks provide discreet venues where teachers are free to discuss what they want with whom they want without the influence or supervision of the school system. According to TLN, if the network were to try to synchronize district objectives with a teacher's learning within the network, a teacher could very easily feel that it is mandate and is no longer *their own*; any administrative pressure to participate in the network could turn it into "just one more thing to do".

So, keeping both of these perspectives in mind, a network should find ways using administrative support to its advantage without letting it invade and degrade the network. Above all, it should remain teacher-driven and discreet. In many ways, networks should treat the roles of administrators much like the roles of experts: use them and don't be used by them. Let the demands of membership body inform and guide network strategy.

## Appendix C

### *Sample Interview Outline*

#### **Core questions:**

Can we start with a little background on the origins of your organization? What sparked the initial desire to actually move forward with this network? Who started it? Was there any research done to determine interest level? How was dissemination carried out (and how is it carried out now)? How do you evaluate the network? Were there challenges in the beginning about the identity and purposes of the network? now? Do you have any recommendations generally about getting over the initial hump of starting a network and moving forward?

In what ways, specifically, does your network foster relationships among teachers? Can you describe how teachers, especially ones new to the network, respond to peer interaction? In what circumstances do you mainly see high levels of bonding, mutual recognition, venting of frustrations, so forth? How does your network balance these types of relationship-building with meeting learning objectives? In your experience, has there been times when a program you were conducting either seemed too informal or, conversely, too rigid? If so, how was it reconciled? I read about how students are incorporated into the network. (cross-classroom online writing projects) Can you talk about how they benefit from that?

In what ways do network programs challenge teachers to examine the broader aspects of teaching? (This might include self-reflection about the teaching practice generally, teacher roles in the school system and society at large, policy, the broad importance of literature in the classroom). And conversely, in what ways does the network disseminate content knowledge- including more or less concrete curricula, field expertise, classroom management, so forth? Is there an ideal balance for you? Do you think benefits of these different knowledge types vary according to level of teaching experience?

In general, does your network take a more delivered or constructed approach? Can you give an example of both forces being used in network programs? Are there distinct norms, core philosophies, social structures that your network sticks to? Do you inculcate people new to the network? When and in what ways are teachers given opportunities to take leadership roles? Any remarkable pros or cons you would like to add to this?

Does your network bring in a lot of outside knowledge to inform its programs (by this I mean so-called 'experts', or practitioners in the field)? How are their skills and expertise utilized to inform the network? How do you bring in outside knowledge without offending teachers- without implying incapacity? Would you say that your network is large enough and has enough pooled experience and knowledge to achieve your vision and goals? Whether it is internal or external, how does the network identify expertise, ideas that work, model teaching skills, so forth? In your experience, what is the best strategy for sharing this knowledge through the network?

#### **Additional areas related to development:**

Can you talk a little about funding? Where does funding go? How do you make a compelling case? What are your major challenges?

Can you speak a little about the differences between online and face-to-face network contact? What do your members like about your website? What notable changes have you made to it that have been beneficial? Are there any other types of technology you have included that are beneficial to members? When have you been successful in bringing teachers face-to-face? Are there natural sub-groups in the network? Is it encouraged?

What is staffing like? How many does it take to run the network (how many in the network)?

Generally, what are the major motives for teacher participation in the network? If teachers aren't exactly intrinsically motivated to participate, what extrinsic incentives do you suggest? I've read that support from administration, interestingly enough, is a major motivator for teacher participation in networks. Do you see this?

## Wisconsin Environmental Science Teacher Network

<b>Tension Area</b>	<i>Learning/ Collegiality</i>	<i>Pedagogical/ Content</i>	<i>Delivered/ Constructed</i>	<i>Outside/ Inside</i>
<b>Goal/ View</b>	Creating bonds among ES teachers ideally in person is a necessary foundation for discussing substantive ideas and developing a great curriculum.	Because of the specific need for a stronger ES curriculum in schools, focus is on learning and developing content knowledge while the discourse concerning pedagogy occurs naturally in the social setting.	The network is teacher-driven and all activities are planned with teacher input; Experienced teachers are utilized as peer educators of newer ES teachers but with an emphasis on open sharing.	The teacher-driven philosophy requires the network administrator to be guarded about the volume of outside knowledge brought in but it is a very valuable tool for sharing content knowledge.
<b>Strategies/ Programs</b>	Annual Summit (1) for ES teachers balances evening social time (including a campfire social) and daytime learning (teachers contribute to the planning); comprehensive learning agenda for the Summit excites teachers and motivates them to immerse themselves in the process.	Annual Summit mixes hands-on field experience and classroom adaptation as a comprehensive approach to teaching content. Teachers that opt to seek graduate credit for the Summit can engage in broader pedagogical inquiries as part of assignments.	Wisconsin ES Course Framework (2) developed by veteran teachers provides a curriculum foundation that teachers can use at will; Digital Resource Library (3) provides an open forum where teachers can contribute or absorb various information; Summit employs both delivery in learning and ample time for sharing and feedback.	ES Course Framework and summit agenda reviewed field resource professionals and university affiliates; Summit includes some presentations by university professors and field experts; emphasis on teachers adapting expert content information to the needs of their classrooms.
<b>Notable Challenges</b>	Bringing teachers together from across the state with the amount of time and resources necessary to engage in meaningful interaction can be difficult. The prospects of collaboration and learning motivate teachers to gather.			Meeting the accuracy demands of the field and making the content classroom-friendly can be difficult. Developing a core course framework reviewed by experts and trusting teachers to adapt according to their own style is a savvy way of achieving this balance.

## Endnotes

1. The Wisconsin Environmental Science Teacher Network has had two annual summits starting in 2008. The 2009 summit was held in the summer and brought ES teachers from all over the state together for the two-day event. Day one was devoted to field experiences where teachers learned skills in areas such as forestry and wildlife tracking. Day two focused on classroom lessons; a field expert gave a presentation on biofuel sustainability and teachers shared classroom experiences. Within these learning blocks, teachers were given time to socialize, especially during meals and a campfire social held in the evening. Overall, teachers felt that the experience strengthened their sense of support and partnership with other ES teachers; improved their professional expertise; and broadened their network of content resources. A comprehensive summary of the weekend and its outcomes was published on the network website for public viewing.
2. The Environmental Science Course Framework was developed (and continues to be) by experienced ES teachers associated with the network and was reviewed by field resource professional and university professors. The Framework was created because of the recognition that many teachers of the environmental sciences neither had the background nor the necessary reference resources to connect field knowledge and classroom curriculum. The Framework is comprehensive in that it covers the core themes and concepts and suggests the order in which they might be taught. The network highly encourages feedback from teachers on how the core Framework might be improved.
3. Digital Resource Library is an online resource that ES teachers can access through the network website. It provides an open venue where teachers can freely access resources- mainly related to content- and post their own. According to the Ms. Buchholz, the Library has been used to a surprising degree, owing its success to the simplicity of the format and the teachers' desire to improve their practices.

## Math Teachers' Circle

Tension Area	<i>Learning/ Collegiality</i>	<i>Pedagogical/ Content</i>	<i>Delivered/ Constructed</i>	<i>Outside/ Inside</i>
<b>Goal/ View</b>	The emphasis on intimate in-person collaboration among teachers and mathematicians and a focus on group problem solving create a natural confluence between learning and collegiality.	The focus is on content where teachers endeavor to solve challenging math problems that they might replicate in their own classrooms; pedagogical knowledge is generated as a natural part of the circle model.	When teachers create or join a circle they buy into the expectations of the network such as the content and problem solving process. The learning model inherently requires that all members' knowledge and experiences must be respected. Teachers have opportunities for leadership roles but are often there simply to participate.	Expert mathematicians designated as circle leaders are built into the design model of each circle. Teachers subscribe to this type of structure when they join a circle. Other mathematicians are permitted and often encouraged to contribute to local circles. The emphasis on team problem solving eliminates traditional lectured delivery and requires mutual contribution from both teachers and experts.
<b>Strategies/ Programs</b>	Startup workshops (4) devote a significant amount of time to having teams plan circles together. Mathematicians and teachers collaborate within their teams and across teams to formulate ideas from content to funding; summer immersion workshops (5) and following meetings bring circle members together to solve rich math problems that motivate learning.	Circle leaders (the mathematicians) formulate a comprehensive content-based learning agenda that proposes complex math problems with difficult solutions. Teachers must use their expertise of math to solve these problems. The team-based problem solving philosophy of the circles serves as mirror that suggests how a teacher might better manage the learning environment of their own classroom.	Workshops in part function to emphasize what the network expects as far as content and process (i.e. team problem solving). Circle leaders have discretion in the learning agenda but almost always include teachers' input in the process- from the type of problems to the amount of time devoted to them. Many circles use a method of co-planning for each meeting where the mathematician and a teacher (volunteer session leader) will design the problems together.	Startup and immersion workshops solidify a partnership between teachers and mathematicians; teachers feel more comfortable about their limitations in math problem solving. Team problem solving and co-planning in circle sessions ensure a degree of equality among teachers and circle leaders.
<b>Notable Challenges</b>			One challenge faced by the network is trying to stimulate inter-circle communication across the US to foster idea sharing. The network is considering developing a core session planning framework as a reference for all circles and is experimenting with online forums to connect local groups.	Because mathematicians become circle leaders by design, it is crucial that they have the communication skills of an experienced teacher. Most who want to participate self-identify but some simply are not good teachers.

## Endnotes

4. Startup workshops are staged by the central Math Teachers' Circle administration to prepare potential new circles for success and to galvanize the conception of circles throughout the US. Starting in 2007, startup workshops bring together teams typically composed of 2 mathematicians, 2 math teachers and 1 school administrator to collaborate and develop a 'business plan' for their proposed circle. Their planning must be comprehensive; everything from content to long-term fundraising must be negotiated and anticipated for circle sustainability. This initial contact among teams creates the foundation for strong bonds and the collaborative problem solving philosophy core to the network. The American Institute of Mathematics- the creator and patron of the network- helps to stage these workshops and pays for travel and meal costs of participants.

5. Immersion workshops for new local circles are highly encouraged by the national-level network. Typically these workshops are held in the summer and bring together circle members for the first time for 4-5 days of math problem solving activities and socialization.

## Teacher Leaders Network

Tension Area	<i>Learning/ Collegiality</i>	<i>Pedagogical/ Content</i>	<i>Delivered/ Constructed</i>	<i>Outside/ Inside</i>
<b>Goal/ View</b>	<p>The TLN private web-based platform offers in-depth discourse among its members. Teachers develop strong connections with one another as they study and discuss topics ranging from policy to classroom management. The structure of the platform and the depth of conversation engage teachers effortlessly in learning.</p>	<p>The online platform is structured in a way that teachers may choose the emphasis of their learning.</p>	<p>Again, the platform is structured to accord with the preferences of members. There are opportunities for teachers to learn and teach others in both delivered and constructed settings.</p>	<p>The network is highly teacher-driven. Outside experts are sometimes used to enrich the knowledge base and contribute to discussions in synchronous meetings among teachers.</p>
<b>Strategies/ Programs</b>	<p>Virtual community organizers foster a culture of sharing and trust among members by limiting the number of teachers as members and emphasizing in-group confidentiality; also, organizers use their knowledge of individual teacher's interests to recommend contacts between them. Webinars are utilized to allow members to interact in a synchronous medium. Teacher leaders are trained to guide and moderate discourses to ensure productive learning.</p>	<p>The platform has three major categories in which its member communities fall. The TLN Forum (6) is a largely open venue where teachers can engage in a variety of open-ended discussions. Teachers solutions groups (7) study specific policies that affect the teaching field and report recommendations and solutions. Mentoring groups (8) offer new teachers (mainly) a chance to connect with and learn from teaching experts.</p>	<p>TLN Forum is a chance for teachers to engage in largely spontaneous unplanned discussions with others. Though specifically focused, teacher solutions groups are also mainly constructivist; teachers develop policy expertise through egalitarian conversations in both discussion posts and webinars. Mentoring groups provide need-based delivery mainly to inexperienced teachers.</p>	<p>Experts are often brought in to give short presentations during webinar sessions in the policy groups but the emphasis is not on 'sit and get'. TLN reinforces the idea that they believe teachers are the 'true experts' and expert utilization is viewed as a vaulting point for pointed peer teacher discussion.</p>
<b>Notable Challenges</b>	<p>Fostering meaningful relationships and learning online can be difficult. Since their beginnings, TLN has had someone devoted to the facilitation and moderation of online discussions. This helps to avoid the atrophy that other online networks might experience.</p>		<p>TLN sometimes struggles with getting consistent participation from new teachers in mentoring groups; largely due to the stresses of a new career, teachers begin to see it as 'just one more thing to do'. Mentors can help mitigate this problem by being adaptive to the specific demands of new teachers.</p>	

## **Endnotes**

6. TLN Forum is the largest single community on the site, hosting around 300 members. The purpose of the forum is to be an open space where teachers feel free to discuss more or less whatever they would like to discuss. Conversations cover a huge range of topics; TLN utilizes this undirected space to cultivate open sharing and partnerships among teachers.
7. Teacher solutions groups are those that study education policy(s). These groups are deliberately smaller- 12 to 20 members- and new members can only join by invitation. The fruit of the work of these groups is generally a policy brief providing solutions, recommendations and any other vital information that teachers should know about policies examined. Often times, their work is published on blogs accessible to the public.
8. Mentoring groups are also generally small and restricted by invitation but can exceed 100 in some cases. In these groups, expert teachers coach mainly new teachers and teachers seeking national board certification in a variety of areas. Mentor work receives publication as well.

## Bread Loaf Teacher Network/ BreadNet

<b>Tension Area</b>	<i>Learning/ Collegiality</i>	<i>Pedagogical/ Content</i>	<i>Delivered/ Constructed</i>	<i>Outside/ Inside</i>
<b>Goal/ View</b>	<p>Many teachers develop strong connections first as they live and attend classes together in a familial environment; they immerse themselves in English throughout summer sessions. BreadNet (9) preserves these relationships and extends their teaching and learning capabilities.</p>	<p>Teachers choose coursework at Bread Loaf according to their preferences and career needs. Through the network and supportive BreadNet tool, teachers explore and put into practice both areas of knowledge.</p>	<p>At Bread Loaf, a distinct ethos, especially regarding pedagogical philosophy and practice, has emerged and is infused into all ongoing learning. Conversely, the familial-type culture fosters equality and members are encouraged to take various types of leadership roles.</p>	<p>Bread Loaf utilizes very few outside experts to inform its activities.</p>
<b>Strategies/ Programs</b>	<p>BreadNet provides a way in which teacher- mainly rural- can stay connected throughout the US. Teachers often confide in their colleagues about policy changes and classroom frustrations on this confidential online platform. Teacher that use BreadNet for conferencing (10) submit preliminary proposals that are reviewed and must meet certain standards. They also use the site to formulate cross-classroom writing projects (11) with other Bread Loafers.</p>	<p>Teachers continually engage in ‘action research’ as a means of self-reflection in the broader aspects of the teaching craft. Rigorous work in content development is offered as part of Bread Loaf coursework and through the network. Cross-classroom online projects allow teachers to experiment with different ways of peaking students’ interests in literature. Asynchronous discussions and conferences through BreadNet foster both knowledge types among members</p> <p>Because many BreadNet users teach in rural, poorer schools, access to necessary technological tools to effectively execute cross-classroom learning can be difficult, if not impossible.</p>	<p>The network, as an extension of the school, supports the institutional ethos that all members are encouraged to maintain. All teachers are permitted to develop and lead their own conferences through BreadNet, while meeting certain standards. The network often times partners new BreadNet users with experienced ones as a tutelage in navigating the software and possibly using it for cross-classroom projects. Teachers have opportunities to showcase knowledge throughout the network through reports, wikis and e-portfolios.</p>	<p>Bread Loaf School of English has the advantage of being a large and highly reputable institution that recruits top-level faculty. It perceives itself to possess all of the resources necessary to inform all of its own pursuits of in terms of pedagogy and content.</p>
<b>Notable Challenges</b>				

## Endnotes

9. BreadNet is the primary online networking tool connecting teachers who receive education from or have graduated from Bread Loaf School of English. It began in 1984 using available telecommunications technology as a supplement for teachers who finished their studies at the school and desired to stay connected to the intimate Bread Loaf community; many of these teachers serve in rural areas with little potential for collaboration, from which BreadNet functions as a lifeline. Today, BreadNet is a comprehensive easy-to-use private web-based platform that connects teachers instantaneously to other national and international Bread Loaf members (their accounts are complimentary). Teachers use the site for a variety of purposes. The 'CyberBarn' is a venue on the site for teachers to make general contacts, post and reply to discussion ideas, request advice and coordinate conferences. Teachers also use the site to coordinate cross-classroom projects.

10. BreadNet conferencing is a major aspect of the site. Member teachers initiate conferences themselves and must submit conferencing proposals to an assigned Bread Loaf administrator who reviews the proposal to ensure that it meets explicit standards. Essentially, there are two types of conferences: public conferences allow other BreadNet members participate at-will; and private conferences are confidential, typically involving only two members. Sometimes mediators are used in conferences to ensure standard compliance and general facilitation. The CyberBarn is the main venue where teachers coordinate and plan conferences with one another.

11. Cross-classroom projects are also coordinated primarily through the BreadNet platform. An example of a cross-classroom project might include two 9<sup>th</sup> grade BreadNet teachers, one from Mississippi and one from Alaska, coordinating their curriculum so that their students have a chance connect with one another in regards to Shakespeare. As students from one class complete essays, the teacher will submit them online and have the distance students read and provide feedback. Bread Loaf teachers find that this is a powerful method of engaging students in reading and writing; students tend react to peer feedback in a more positive way than teacher feedback.