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Creating smarter schools through collaboration

Megan Tschannen-Moran, Cynthia Uline, Anita Woolfolk Hoy
and Timm Mackley
The Ohio State University, Columbus, Ohio, USA

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Abstract *Principles of cognitive psychology are considered, not primarily as they inform classroom practice, but as they inform school organization and administrative practice in schools. Theories of knowledge as distributed, social, situated, and based on prior beliefs and knowledge are applied to organizational learning within schools. Collaborative problem solving is explored as a means that schools might employ to become smarter. The study is situated within a Midwestern high school that is striving to improve itself. This school employs collaborative strategies to learn and adapt to changed expectations and circumstances. In the school examined, this collaboration is orchestrated through the creation of discourse communities among teachers and cognitive apprenticeships among teachers and administrators.*

Schools are in the learning business. Their central mission is to construct environments that facilitate the learning of essential knowledge, skills, and attitudes. Recent developments in cognitive science suggest new conceptions of cognition that have implications for how we structure learning environments for children and teachers. But what of schools themselves? Can schools learn? Argyris and Schon (1996) describe organizations as possessing knowledge, as well as strategies for learning or gaining new knowledge. If we think of schools as learning organizations, what can we glean from new views of cognition to make schools smarter?

This study applies the principles of cognitive psychology to examine the practices of a Midwestern high school, one that is striving to improve itself. This school provides a context for the study of organizational learning through collaboration and collaborative problem solving. First, we draw on theories of cognition as they might be applied to the organizational learning within schools. Then we consider how a particular school employs collaborative strategies to learn and adapt to changed expectations and circumstances – in other words to become smarter. In the school that we examine, this collaboration is orchestrated through the creation of discourse communities among teachers and cognitive apprenticeships among teachers and administrators.

The nature of cognition

New views of cognition stress knowledge as constructed by learners through social interaction, built on a foundation of existing knowledge structures and beliefs, rather than as nuggets of information filling a receptacle. Because cognition is social in nature, it is situated in a particular context and distributed

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across participants in that setting (Putnam and Borko, 1997). These conceptions of cognition invite us to consider the nature of organizational learning in schools.

Knowledge is distributed

Schools function as holding environments for knowledge, not only in the minds of the current staff members, but also in the files, stories, and other forms of institutional memory that serve to remind current participants where the school has been and what former participants have known and passed along. Schools possess knowledge embedded in their routines and practices and in the particular strategies they select for performing complex teaching and organizational tasks when other strategies for accomplishing the same purposes might just as well have been employed (Argyris and Schon, 1996). A school's organizational structure, systems of communication, means for allocating resources, and the rewards and sanctions that are used to keep participants in check express what the school has "learned." Accepted teaching practices, school disciplinary codes, honors, and ceremonies embody the school's knowledge and beliefs about student learning and behavior. Knowledge is invested in the physical objects that organizational members use as guides to conduct their business, such as curriculum materials or library resources. Even the physical structures themselves serve to facilitate certain forms of social interaction and inhibit others. This knowledge, distributed throughout the school organization, constitutes the existing beliefs and knowledge of the school, and forms the basis of all new organizational learning.

Learning is social

Schools are occupied by people. The knowledge schools possess is distributed among those individuals; therefore the school's knowledge is inherently social. The knowledge of individuals only becomes organizational knowledge to the extent that it informs organizational actions and beliefs (Argyris and Schon, 1996). Organizations that appropriately tap the knowledge of various members in decision making become smarter. These shared decision-making processes also expand the system's capacity for innovation and invention. But to capitalize on social processes in decision making requires the cultivation of a culture of mutual respect, individual and joint responsibility, and a level of discourse in which ideas are freely shared and explored (Putnam and Borko, 1997).

Learning is situated

Learning takes place in a context and is influenced by that context. Knowledge that is learned in isolation from realistic problem situations tends to remain inert, and learners may have difficulty applying it appropriately in new situations. When learning is situated, students come to understand the purposes or uses of the knowledge, and they grasp the different conditions under which their knowledge can be applied. Learning in multiple contexts

induces the abstraction of knowledge, so that students acquire knowledge in a dual form, both tied to the contexts of its uses and independent of any particular context (Collins *et al.*, 1991).

Organizational learning that takes place in the context of a school is situated within the problem-solving experiences of teachers and administrators. As they conduct the business of school, they encounter the problems that are specific to their particular students and community at a particular point in history.

Organizational learning

Organizations that function in stable environments with relatively homogeneous elements can afford organizational forms that are highly standardized, formalized, and centralized. However, as environments become more complex and unstable, organizations must depend on increasingly rich and sophisticated information processing mechanisms to cope with the uncertainty (Burns and Stalker, 1961; Mintzberg, 1979; Pennings, 1992). With higher expectations of equity and resource distribution for students, a diverse student population, new technologies, and changed expectations of what is required of graduates to compete in a global economy, schools find themselves in a dynamic and complex environment and under political pressure to adapt. To cope with these changes schools must become smarter, that is, they must become learning organizations.

Argyris and Schon (1996) describe a learning organization as one that works efficiently, readily adapts to change, detects and corrects errors, and continually improves its effectiveness. Organizational learning is often precipitated by efforts at sensemaking in the wake of a problem or disruption. Organizational learning occurs when individuals within an organization experience a surprising mismatch between expected and actual results of action and inquire into it on the organization's behalf.

They respond to the problematic situation through a process of thought and further action that leads them to modify their understandings of organizational phenomena and to restructure their activities so as to bring outcomes and expectations into line.

Organizational learning enhances not only a school's ability to cope with a changed and changing environment, but also its capacity to achieve the primary mission of educating students. Organizational learning opportunities for school professionals and accountability have been strongly related to improved student learning, while individual autonomy of teachers was negatively associated with student achievement (Smylie *et al.*, 1996). Individual learning becomes organizational learning as it is shared, and becomes distributed among participants in the organization. Two mechanisms for this kind of learning – collaboration between teachers and collaboration between administrators and teachers – are described below using data from a suburban high school in a Midwestern state.

Method of inquiry and analysis

Brandonburg High School, a comprehensive high school, was chosen for a year-long in-depth case study because it has been identified as a high performing school and one that has made significant progress in school-based, systemic reforms (Ontario Institute for Studies in Education and the Ohio Department of Education, 1999). The aim of this study was to understand the nature and process of the ongoing improvement efforts within this school and to explore ways collaboration supports this continuing development. That is, does this school continue to grow smarter through collaboration, and if so, how does this happen? The case study was carried out by a university/school research team comprising a teacher, the building principal, an assistant principal, a district-office administrator who had been a teacher at Brandonburg, and two university researchers. The team worked together to develop a case study plan with core research questions, interview guides, standardized observation strategies and protocol, and appropriate document samples. Instruments and field visit strategies were tailored to capture the specific content of and process for school improvement at the school.

Site visit and data gathering

From 15 September to 5 May, the university researchers spent one to two days each week at the school interviewing staff, observing classes, shadowing teachers and students, and attending meetings and/or presentations. School research team members assumed responsibility for scheduling interviews and for making other necessary site visit arrangements. They also assisted with ongoing revisions to the research plan and various instruments and protocol. Observations included shadowing both teachers and students representative of different program areas and grade levels, attending team meetings, faculty meetings, school improvement team meetings, critical friends groups, and student exhibitions. Preliminary interviews were conducted with faculty during these shadowings. A purposive sample of teachers was then chosen from the more than 100 faculty members for extended interviews, tapping the range of perspectives and teaching philosophies represented on this diverse faculty.

Interviews with faculty, staff, district-level administrators, a former principal, community representatives, students, and parents included both focus group and individual interviews. Questions were employed flexibly, serving as a guide to conversation rather than an oral survey (Miles and Huberman, 1994). Approximately 47 interviews were conducted, including 21 teachers, four administrators, 14 students, and eight parents. Interviews lasted on average one and a-half hours. Eight focus group interviews were conducted and approximately 18 formal meetings were observed.

Data management and analysis

All interviews were audio-taped and transcribed. Data were then organized, classified and coded utilizing HyperResearch software. Initial coding was done

using a priori codes derived from the literature on school reform and collaboration. Additional codes were added as the data required (Crabtree and Miller, 1992; Lincoln and Guba, 1985). The investigators employed a qualitative thematic strategy of data analysis, making inferences by objectively and systematically identifying specified characteristics of text units, searching for emerging themes as well as teasing out anomalies and contradictions, across various interviews (Holsti, 1969; Merriam, 1988).

Potential problems of validity and reliability were addressed through triangulation of data, that is, using multiple data sources to provide multiple indicators of the same phenomenon (Denzin, 1970). In addition, member checks were conducted with key participants, asking if the data were accurate and interpretations plausible (Guba and Lincoln, 1989). School representatives to the research team participated fully in validation of research findings. The draft report was made available to school personnel for review, providing a check on confidentiality, accuracy, and the opportunity to submit alternative interpretations of findings. Several factual errors were corrected and additional information incorporated. No corrections of interpretation were advanced by participants during these member checks.

Portrait of Brandonburg High School

Among high schools in this Midwestern state, Brandonburg High School has been a leader in school improvement initiatives. Association with the Coalition of Essential Schools led to the creation and development of the programs and practices that now characterize the school (Sizer, 1984, 1992, 1996). Each coalition member school applies a set of core principles in order to develop its own unique reform plan. Coalition schools stress the professional perspectives of teachers through collaborative forms of school management and emphasize the central importance of students by focusing on student social and academic behavior. Brandonburg's plan includes a master schedule that incorporates extended double blocked teaching periods; team teaching options that include grade-level teaching teams; staff development opportunities that feature a daily common planning time for all teachers and small group support teams known as critical friends groups; a collaborative management system that invites teacher input through participation in school improvement committees; and a "learner-centered" teaching philosophy that places a greater emphasis on group work, independent research projects, and authentic assessment activities.

The purpose here is not to advance the Coalition of Essential Schools as the preferred vehicle for reform. Any strategy for improving a school must emerge from the particular setting and the needs, problems, and opportunities there identified. Still, as these local characteristics are clarified, many schools choose to initiate relationships with outside networks as sources of new knowledge and to stimulate discourse around new ideas. Brandonburg High School has chosen the Coalition of Essential Schools to stimulate and guide inquiry and, as a result, has developed a number of collaborative strategies aimed at improving practice.

As these strategies were being developed, the high school also experienced a significant increase in student enrollment. Some of this increase was due to the general growth of the school district's population, but a sudden and dramatic change at the high school came in 1994 as a result of the reassignment of approximately 500 ninth grade students from the middle school to the high school, bringing the total to almost 1,800 students. This rapid growth has resulted in focused and sustained efforts to personalize management and instruction of students and to insure efficient communication among the roughly 120 teachers and support staff.

Asking schools and teachers to change their fundamental beliefs and practices presents a formidable challenge. This challenge is all the more substantial as schools attempt to change while in the midst of conducting their everyday business. Engaging in significant change involves a period of disequilibrium that can leave teachers and administrators anxious, uncertain, and stressed even if the changes also bring renewed excitement and vigor. At a large school like Brandonburg, moving significant numbers of teachers toward common understandings about the work to be done is a daunting task. With many teachers come many personalities, many opinions, and many preferences. Progress is neither easy nor smooth. As one teacher described it:

You have some people, I would say maybe ten percent, who are very, very much into reform and restructuring, using the school improvement process, using Critical Friends, using whatever measure they can to restructure. Then I would say you have a whole large portion of the staff that is involved in some type of restructuring effort that they're satisfied with, and it's working out pretty well. Then I would say that maybe you have about maybe 5 or 10 percent that don't want any part of that.

Much of the reform literature directs itself to reconceptualizing teacher work broadening teachers' professional profiles beyond the classroom in ways that distribute faculty energies and knowledge on behalf of team and school-wide initiatives (Little and McLaughlin, 1993; Louis and Kruse, 1995). Brandonburg is attempting to effect this change by involving all teachers directly in school improvement decisions. Faculty responsibilities have been redefined, shifting focus from the classroom to the school as a whole. In terms of teacher work, this shift requires teachers to value different sorts of activities and to build different kinds of work relationships. These activities and relationships also allow, even encourage, teachers to view their work from a new vantage point. It is not enough for them to be good at what they do in the classroom, they must also contribute to the corporate mission. They must be planners, organizers, researchers, instigators, and experimenters. In this regard, the school is moving from local and private practices to universal and public practices. Few Brandonburg teachers approach an ideal balance between school-wide, team, and individual emphasis, and yet this is the goal. The agents of change at Brandonburg recognized the importance of continuity, but have attempted to foster the sort of creative tension necessary to changing habits on a broad scale.

Teacher collaboration: creating discourse communities

Marks and Louis (in press) assert that professional community among teachers is a critical component of organizational learning. Crucial practices in the development of this community include increased reflective dialogue, open sharing of classroom practices, the development of a common knowledge base for improvement, and collaboration on the development of new material and curricula. New shared norms must develop related to enhanced practice, increased trust and respect, and improved means for conflict resolution. In order for teachers to successfully adapt their teaching practices to meet the changing expectations of various reform initiatives, they must have opportunities to participate in what Putnam and Borko (1997, pp. 1247, 1250) refer to as "discourse communities."

Just as students cannot learn science by interacting with the physical world without interaction with others who know science, teachers are unlikely to transcend their current view of teaching practice without an influx of ideas or ways of thinking about teaching, learning, and subject matter from another source. . . Just as students need to learn new ways of reasoning, communicating, and thinking, and to acquire dispositions of inquiry and sense-making through their participation in classroom discourse communities, teachers need to construct their complex new roles and ways of thinking about their teaching practice within the context of supportive learning communities.

These collaborative communities provide opportunities for teachers to reflect deeply and critically on their own teaching practice, on the content they teach, and on the experiences and backgrounds of the learners in their classrooms (Putnam and Borko, 1997).

As teachers collaborate in problem solving, they practice the skills involved in the development of expertise, thus enriching their thinking processes and transforming the knowledge of individual teachers into organizational knowledge. Working with other teachers within a context of mutual respect, one that encourages productive levels of debate, challenge, and conflict, can invigorate teaching with increased intellectual stimulation as well as bringing to bear values that are increasingly explicit and shared. Sharing with one another in this way can support the risk taking and struggle entailed in transforming practice. It can also help teachers impose meaning and organization on incoming information in light of their existing knowledge and beliefs (Putnam and Borko, 1997).

Discourse communities at Brandonburg

Brandonburg has restructured the daily routine of teachers so that they are involved with more activities that relate to the central educational mission of the school. This means more time for planning and more time for collaborative involvement around their teaching. The goal is to increase the level of professionalism by changing what teachers actually do during the course of the day. Rather than assuming clerical and/or supervisory duties, teachers meet with team members, engage with critical friends groups or invest time working

toward individual professional development goals. One teacher emphasized the importance of setting such a professional tone not only on behalf of teachers, but for the sake of students as well. She says:

I think it has made all of us look at what we do. I personally feel that it's kind of hypocritical to say to kids, "You have to be a lifelong learner because within your lifetime, you will be retrained five different times," and then stand in front of them and be someone who has never been retrained in anything.

New faculty members must be invited into this atmosphere of heightened professionalism. Brandenburg teachers and administrators recognize the importance of socializing novice teachers as well as more experienced colleagues who are new to the school. This does not suggest that all teachers must embrace innovations in their current form, but rather, that all teachers be engaged in ongoing dialogue about their individual teaching practice and how it might inform, and be informed by, these innovations.

Rookie roundtables

Rookie roundtables are one vehicle used to encourage such dialogue. These roundtables were developed to acquaint new teachers with school policies and practices. The informal after-school meetings are chaired by veteran faculty members and are intended for new teachers, though all teachers are welcome to attend. Assessment of the program's first 12 months reflects a positive response on the part of new teachers. For the eight rookie roundtables conducted, the attendance rate of these new faculty members was consistently at 90 percent. Discussion topics ranged from the history and advantages of double blocking to alternative assessment strategies to interdisciplinary instructional planning. Those teachers who have not yet established a supportive network with their teaching neighbors could ask questions and gather information. New faculty gained a sense of how coalition principles were operationalized through teaming, cross-disciplinary instructional integration, block scheduling, personalization, learner-centered teaching methods, authentic instruction, and alternative assessments. The purpose of the rookie roundtable was first to inform, but also to persuade. It was a means for new faculty members to learn the systems of communication, norms of professional behavior, and the vehicles for collaboration. These are the mechanisms of professional collegiality at Brandenburg.

Team teaching

One collaborative device that was widely promoted at Brandenburg was the grouping of teachers into teaching teams. These teaching teams shared a common planning period each day and were responsible for a common group of students. The teams were designed to facilitate cross-disciplinary instruction, further the school's personalization goals, and provide personal and professional support for the team members. Attendance at a planning meeting could reveal a number of different issues being considered. Parent contacts were common, as were discussions regarding individual student performance

and progress. Curricular units were sometimes planned, honed, or revised. One particular team meeting observation was conducted the week before the team introduced a modified double block schedule. The team fine-tuned the schedule in response to two team members' concerns about losing track of some students. The revised schedule left them seeing two groups of students in double blocks one week and the second two groups the following week. They decided, for the time being, to retain Friday's on the present schedule, seeing all four groups "to touch base."

One Brandenburg variation on teaching teams was the practice of creating dyads. When two (or possibly three) teachers choose to work collaboratively outside the structure of the freshman and sophomore grade-level teams, the Brandenburg administration accommodated their efforts by scheduling those teachers' classes in consecutive periods and in close physical proximity, thereby permitting them some flexibility in grouping their students. A teacher enthusiastically described her teaching dyad:

We just can't work alone anymore. We need each other very much. If you would watch us plan, you would laugh because the whole time we're about as exuberant as I am right now. The beauty of planning together is, when we come together and plan, there's this wonderful third woman that emerges, and she's smarter than both of us.

Schools must create the time and space for discourse communities to develop and thrive. Day-to-day work conditions and arrangements provide the vehicles for cultivating new norms of collaboration. From roundtable discussions to grade-level teacher teams to team teaching within shared instructional spaces, people need myriad opportunities to explore, rehearse, and experiment. These new structures encourage an ongoing exchange of information. They have the potential to push teacher knowledge and expertise beyond individuals to benefit the entire school. When formally endorsed and supported, such collaborative activities become routine and authentic means of school growth and improvement.

Principals collaborating with teachers

Making intellectual pursuits into individualistic activities seems somewhat idiosyncratic to schools. "In the world outside of school, intelligent activities typically are collaborative rather than solo performances" (Pea, 1993). Leithwood and Steinbach (1995) noted that among principals, recognition of the importance of collaboration seems to grow with experience. Part of administrative expertise becomes knowing how to construct a process in which important decisions are made through collaboration. Expert principals, like corporate entrepreneurs, "get their projects done by crafting coalitions and building teams of devoted employees who feel a heightened sense of joint involvement and contribution to decisions" (Kanter, 1983, p. 241).

Collaborative problem solving can make schools smarter by enhancing the cognitive processes of organizational participants as they act on behalf of the school. Collaboration holds out the possibility of better thinking on the part of both administrators and teachers, and increased cognitive growth as

participants articulate their thought processes, listen, and respond to the thoughts of others. This growth, however, is not automatic just because a group of people has attempted to solve a problem together rather than an individual solving it alone. Leithwood and Steinbach (1995) propose that in collaborative problem solving, participants are more likely to experience long-term growth when the process used by the group is actually superior to the individual's independent problem solving and the individual participants recognize this superiority. Collaborative problem solving enables individuals to compare their own independent problem solving with the group's processes and identify ways of increasing the robustness of their own independent processes. Growth will also be enhanced when the group has opportunities to reflect consciously on the process, evaluate it, and participate in its refinement.

Group decision processes, however, also may be inferior to individuals deciding alone. Groups can fall prey to the same kinds of heuristic biases as individuals, and in some cases are even more likely to do so (Allison and Messick, 1985; Argote *et al.*, 1986). In addition, group discussion can tend to polarize judgment, moving it toward more extreme positions than the members individually might have held (Myers and Lamm, 1976). Groups can suffer from cognitive loafing, where members contribute less than their full effort, assuming others will take up the slack (Latane *et al.*, 1979; Weldone and Gargano, 1985). And group processes may be less efficient than individuals when the competition for "air time" limits the participation of members who have a useful idea or perspective to contribute (Hill, 1982; Webb and Palincsar, 1996). Leaders must also be aware that participative processes can be costly in terms of time, which is a valuable and limited resource. The emotion that is generated by collaborative processes can benefit the organization through increased enthusiasm, satisfaction, and ownership on the part of participants, but it can also leave people with hurt feelings and interfere with the quality of decisions when conflict is not managed productively (Mansbridge, 1973).

When decision makers in schools are aware of the potential drawbacks of group decision making they can work to minimize the negative effects in order to capitalize on the potential benefits. Those who would structure collaborative decision processes would do well to be aware of the potential biases and pitfalls that can develop in a group process. Group discussion and problem solving can lead to better solutions and decisions when they are structured in such a way to facilitate the full participation of all members (Kelley and Thibaut, 1969). Some level of conflict seems to be necessary, or at least helpful, to reaching better decisions (Janis, 1982). Constructive conflict increases the chance that the group will outperform even its best member, a situation labeled "process gain" (Sniezek and Henry, 1989). Cultivating a productive level of controversy is one means leaders can employ to counteract the negative effects of group biases (Janis, 1982; Sniezek and Henry, 1989). When carefully structured, collaborative problem solving can be a valuable means to enhance the quality of organizational decisions.

Collaborative problem solving at Brandonburg

Brandonburg High School encourages collaborative problem solving through administrative advisory groups and formal school improvement committees. These organizational structures encourage collaboration in order to create deeper ownership of the school improvement effort by teachers, foster leadership skills within the faculty, and create an organizational culture that values the perspectives of teachers. The emphasis is on opening lines of communication between teachers and administrators. Students and parents are not excluded from collaboration. School improvement teams, for example, are designed to include representatives from the student body and the community. An important end goal of collaboration is greater ownership and loyalty to the organization by teachers, students, and parents. Says a teacher:

We're trying to create our own community where everybody has ownership and everybody is a part of it. That's pretty much the bottom line. I feel respected as a professional here. That's important in doing our best work. If I'm respected and supported I'm going to be a much better teacher and kids are going to learn from it.

By constructing a process of widespread engagement in the changes and improvements at the school, leaders at Brandonburg have found a way to tap into the stores of knowledge possessed by individual teachers and to make it organizational knowledge. In fact, individual teachers are often the initiators of ideas and solutions at Brandonburg, engaging in problem finding as well as problem solving. For example, one teacher points out:

[A colleague] has been doing some research on curriculum mapping - the effects of it, the advantages, disadvantages, and so on. It's a really powerful tool. She has been instrumental in exploring it here, not only across departments but across grade levels, even for the district.

Cognitive apprenticeships

As principals include teachers in collaborative problem solving and teachers begin to step into leadership roles, principals can share their problem-solving knowledge and create a culture in which a common set of values drives the decisions that are made. These kinds of experiences can be conceived of as cognitive apprenticeships. Apprenticeships typically involve an expert showing the apprentice how to do a task, watching the apprentice practice portions of the task, and then turning over more and more responsibility until the apprentice is proficient enough to accomplish the task independently. In a cognitive apprenticeship, thinking processes are brought to the surface and made visible through "thinking out loud" so that novices can build a conceptual model of the processes that are required to solve the problem (Collins *et al.*, 1991).

Teachers and principals guiding each other. Teachers and principals who have received training in certain aspects of the reform efforts can structure cognitive apprenticeships for other administrators and fellow teachers. During the initial stages of implementing coalition principles at Brandonburg, a number of faculty members received formal training at Brown University. Since then, coalition principles have been communicated both formally and

informally through interaction with trained staff members and through experience with the teaching practices that reflect the coalition philosophy. One teacher describes his experience with the formal training:

We had the great chance as a team, the summer before we started, to go to Brown University and spend the week, particularly with the nine principles, and deciding as a group, which ones, if any, we could buy into and really explore. We looked at three or four in particular that we thought would be useful. We introduce those principles to the students and parents at the beginning of the school year and tell them this is basically what we look at on a daily basis when we're deciding our curriculum and what we're going to do with the students.

Even teachers who did not receive formal training expressed enthusiasm for the learning process. Teams wrestled with these ideas in the context of instructional planning and preparation. They read together, placed cues on their walls, and consciously practiced one or another principle within a particular unit or specific lesson. Over time, the principles became a resource for team problem solving.

In order to facilitate discussion on coalition principles and to provide a relaxed atmosphere where the implications of those principles could be considered, an informal weekly meeting called "paradigm benders" was initiated. A teacher who was part of the paradigm bender sessions remembers the experience as a valuable one where coalition principles were thoroughly examined through faculty discussion:

We'd take one of the Coalition principles and we'd stay on Wednesday after school for an hour. You could come if you were interested. That really got people thinking about how it pertained to them and how it could be applied in their classroom. You could stay as long as you wanted. We always had over 20 people.

The formal training and informal modeling opportunities, the principle-focused team problem solving, and the reflective paradigm bender sessions, all represent strong apprenticeship experiences. Teachers thought out loud, coached one another, and practiced until the implementation of these principles, in one manner or another, became second nature. Teachers began to adopt them as habits of practice and thus they became habits of the mind. Brandonburg teachers and administrators learned together and the organization grew smarter about the reform strategy it had chosen and the philosophy that undergirds it.

School improvement committees. Brandonburg school improvement committees represent another more formal attempt to create cognitive apprenticeships. These committees are intended to formally address specific areas of school program and practice. Based on personal choice, each faculty member is required to serve on a school improvement committee. Choices include student achievement, teacher roles and responsibilities, arena scheduling, attendance, student success and discipline, and school and community. The committees are made up primarily of teachers, but they also can include administrators, parents, students, and board members. As with other aspects of school collaboration, the school improvement committees have come to be an important mechanism in decision making. There is a growing

expectation among some teachers that all significant decisions should be reviewed by the standing school improvement committees. One teacher stresses the importance of this kind of participation, "Getting teacher input on decisions is key. We don't just make a decision quickly around here, because if it affects teachers, they need to have input."

At Brandonburg, administrators participate on every school improvement committee. One teacher qualifies, "Not as a team leader, but just working on the team. Sometimes they are used as a resource. When we need to know how to go about doing something, that's the person we ask. Other times he'll be a worker just like the rest of the team." The school improvement process has caused teachers to do research and seek out necessary information, either firsthand from another person or through considering the relevant literature. Committee members do research on their topic and present their findings. Says one teacher, "Our administration has been good about distributing pertinent articles to the staff. It's our responsibility, our choice to [read it], but it's made available." This collaborative process seems to be having the desired effect on many teachers, as expressed by one who leads the school's attendance committee:

Being on the school improvement committee, and being a leader, has made me find out more about attendance, and it's made me more interested in it. It has pushed me to take ownership beyond the classroom. How can we improve it? I feel more responsible for our attendance.

These committees have completed two years of operation. During the first year, some of the meeting time was needed simply to clarify the role, the purpose, and the limitations of the individual committees. As a teacher explained, "I don't think that we were particularly effective last year. I think it was a combination of not understanding what it took or what was expected of us." The newness of the experience meant that some work accomplished during the first year had to be modified, or even totally redone, the second. For example, the attendance committee realized that collaboration with the attendance office, the deans-of-students, and the assistant principals was necessary in order to develop appropriate and effective attendance policies. The first year committee was modified in the second year to reflect this important input, and the newly constituted committee then adjusted their school-wide attendance plan accordingly.

Certain committees can point to significant school-wide changes that were a result of their collaborative efforts. The accomplishments of the Arena Scheduling Committee, for example, drew praise from many teachers. Through the efforts of this committee, the former computer-based scheduling was replaced with an arena scheduling process that allows students to select their own courses and teachers and to build their own schedule. In a large school like Brandonburg, arena scheduling distributed some of the responsibility for guiding students toward appropriate courses, easing the pressure on the guidance department, and allowing classroom teachers to share in the advising process. One teacher explained:

Our scheduling process was a nightmare and needed to change. Last year, through the school improvement process, we implemented arena scheduling. That committee has continued to work together, and the scheduling gets better and better. Whatever they invent, they bring it back to ask what they've done wrong or left out.

A committee member adds, "The teachers as a whole were instrumental in developing the process. Guidance came to us with the problem, and then we sat down and figured out how to make it work." Another teacher says, "If you told me that we would have 1,800 kids go in and do their own scheduling, and it would work better than our process had before, I wouldn't have believed it."

Teachers' assessments of collaboration

The potential benefits of involving teachers in school-level decision making come with costs of time and effort. Fullan and Stiegelbauer (1991) present evidence that large-scale participation is sometimes counterproductive. Elaborate needs assessments, endless committee meetings and added managerial responsibilities often consume large amounts of energy and time, and ironically can create confusion and alienation. Fullan and Stiegelbauer (1991, p. 62) warned, "There is even the not unlikely situation where elaborate pre-action discussions exhaust the energy needed for implementation, so that by the time the innovation reaches the action stage, people are burnt out". In order to reap the benefits without undue cost requires that collaborative processes be carefully structured and planned. It is important to make thoughtful and strategic decisions about the use of teacher time. Teacher time needs to be seen as a valuable commodity that the school cannot afford to waste. Teachers also need training and the opportunity to learn new roles and skills. When these potential costs are managed effectively, collaborative problem solving can invigorate a school and transform it into a dynamic learning community.

Clearly, involving every teacher in every decision would be unmanageable and counterproductive. The Hoy and Tarter (1995) model of shared decision making offers guidance in who should be included in which decisions. It is based on the proposition that teachers want to be involved in decisions when they have a personal stake in the outcome and expertise to bring to the process. When the outcome does not affect them, or they have no knowledge of the issues, teachers consider involvement a waste of time that may lead to resentment (Bridges, 1967). Knowing when and how extensively to involve teachers will make moving toward more collaborative styles of management more productive in facilitating organizational learning.

Teachers at Brandenburg were generally supportive of the theories underlying collaboration, but often they were spread too thin when those theories were put into practice. The concern reported most frequently, both by those who actively participated in reform programs and by those who held themselves apart, was that collaboration was a huge drain on teacher time and energy. Even those who appreciated and welcomed the opportunity to serve on committees and to share in the decision-making process reported that they

were overextended and overworked. The purpose of inviting teachers into the decision-making process is to acknowledge their professional competence, give them a voice in the operation of the school, and include them as partners in the administrative experience. The unexpected result of this collaboration between teachers and administrators was that many teachers would prefer to teach their classes and leave the administrative details to someone else. Many teachers said that they resented the additional responsibility:

If I wanted to do some kind of administration thing I would have gone to school for that. My main passion is for students and teaching the students. I do not have enough time in the day. There are tons of ideas rolling about in my head about different Internet projects and things. I don't have enough time to do that, let alone some of these things that may not be my concern.

For these teachers to be willing to engage in collaborative problem solving, they need to see the payoffs in terms of student learning and classroom practice.

Teachers reported that school reform required them to do many different tasks that were not directly related to teaching. Teachers often expressed willingness to take on new tasks, but they also struggled to juggle so many responsibilities. Many teachers indicated that the demands of the classroom, coupled with their ever-expanding involvement with collaborative activities, were wearing them down. On the other hand, many felt the benefits outweighed the liabilities. Said one:

I'm not always happy with all the meetings and the way that things work out. But, I don't know of a better way to do what we're doing, because we're attacking many, many issues at the same time. It's not my favorite thing. I would much rather be sitting here with a kid. But on the other hand, I remember when I wasn't in any part of the politics of school, in anything that had to do with change. I just went to work and came home. I'm glad that I'm forced to be knowledgeable and to know what is going on. It makes me feel more a part of the whole instead of just my own teaching job.

At Brandenburg, the nature of and means for collaboration remained fluid. Participants continually sharpened the processes for and the foci of teacher deliberations. Recent efforts to manage the size of the school led to the establishment of two separate houses or academies. Ninth and tenth grade students and teachers make up the Preparation Academy, and eleventh and twelfth, the Graduation Academy. School improvement committees parallel this structure. In response to concerns about curriculum alignment within subject areas, school improvement committees within the Preparation Academy have assumed curriculum mapping as their charge. Graduation Academy students are now required to declare their educational intent beyond graduation at the eleventh grade (e.g. college bound, vocation bound). Committees within this academy are studying the alignment of the curriculum in light of these programmatic choices. Although the school improvement committees continue to focus on the corporate mission, their scope is narrowed and thus the work more connected to teaching and learning, the work teachers deem most important (Louis and Kruse, 1995).

Addressing organizational learning disabilities

Organizations, like individuals, can suffer from learning disabilities. Senge (1990) observes that because of the way they are designed and managed, most organizations learn poorly. He laments that these disabilities operate despite the best efforts of bright, committed people, and that often the harder they try to solve problems, the worse the results. A number of factors make the kind of organizational learning we have suggested difficult for schools. Among these learning disabilities are norms of isolation, autonomy, and equal status in the teaching profession as well as lack of decision-making influence and poor conflict management skills.

Norms of isolation

Researchers who have documented the work life of teachers have noted how isolated teachers are from one another, how few interactions teachers have with other adults in the course of a day, and how brief those few encounters are (Little, 1990; Lortie, 1975; Sarason, 1992). Smith and Scott (in Kouzmin and Scott, 1990, p. 9) note the irony of this situation, "One would expect that a profession dedicated to learning would be structured in such a way that its members would learn from one another. In this light, the isolation of teachers from other adults is a glaring anomaly." These isolated conditions impede professional growth by making it difficult for teachers to exchange ideas among themselves and with administrators.

The isolation of teachers is not always viewed as troublesome to teachers, but may be seen as necessary to maintain the autonomy teachers value. Norms in the teaching profession have developed supporting this isolation, norms that have to be confronted before teachers will be willing to collaborate. Two strong norms support teachers' autonomy: the "ideology of noninterference" (Ashton and Webb, 1986), and the norm of equal status.

Rooted in the uncertainty surrounding the teaching-learning process and the subsequent flexibility needed to address the varying needs of individual students, autonomy is a value and norm historically associated with the teaching profession and the public school organization. Although autonomy may vary considerably within and among schools, teachers tend to jealously guard the boundaries of their classroom from the encroachment of others, be they parents, fellow teaching colleagues, or administrators (Johnson, 1998, p. 18).

Autonomy and noninterference. Teachers define their need for autonomy as a right to discretion and freedom from scrutiny. To exercise discretion is to be allowed to use one's expertise with minimum hindrance from others. Interdependence, however, must be traded off against discretion (Barot and Raybould, 1998). The norm of noninterference tends to work against creating the kinds of "discourse communities" described above because it works against cultivating the kind of challenge, peer debate, and criticism required.

Critical friends groups at Brandonburg represent an aggressive strategy aimed at reducing teacher isolation. Their purpose is to provide an intimate setting for professional growth and personal support. Members of critical friends groups are encouraged to use one another as sounding boards for their

thoughts and ideas. Creating opportunities where peers learn from one another and where practice is "deprivatized" represents for many the ideal school culture (Firestone and Louis, 1999, p. 314). Explains one member of such a group:

[The purpose of] critical friends is to improve my individual classroom practice. In order to do that, you have the opportunity to try something, to discuss it with your colleagues, to get input. But the whole goal of it is improving my classroom practice. I'm documenting what I'm doing on a daily basis, so I can look back.

Along with rookie roundtable, critical friends groups also help to initiate new teachers into the school culture. At Brandonburg, new teachers are required to participate. Many teachers feel that participation in these small support groups is essential for developing the wide range of skills and knowledge that new teachers must have in order to be effective. Teachers can be coached by their peers as they move through a project, constantly sharing and getting feedback. Teachers are expected to custom design their own individual improvement plans, and use their colleagues as a refining factor. The end goal of the critical friends group experience is to improve student learning and performance by improving teacher skills and enhancing organizational learning.

The egalitarian norm. Teachers often hold an "egalitarian norm" in which all teachers share equal status. In schools where this norm exists, requests for peer assistance may involve psychological and social costs that participants judge to be too dear, costs to one's own sense of competence, the status one has with important others, the obligation one incurs by accepting resources (Little, 1990). There are costs, as well, in offering assistance, both in terms of the time and effort involved and also in "an erosion of the corpus of ideas, methods, and materials that serve as the basis of individual reputation, giving teachers distinctive identity and status" (Little, 1990, p. 518). Collaborative practices that designate mentors or teacher leaders violate the egalitarian norm by conferring superior status on those who would offer advice. Little (1990, p. 520) explains some of the further difficulties inherent in creating collaborative communities in schools:

Involvement and participation require greater contact and visibility, greater awareness of one another's beliefs and practices, and greater reliance on verifiable information as a basis for preferred action. In an effort to arrive at decisions teachers join discussions that sometimes link them to like-minded colleagues; those same discussions, however, may force teachers to confront peers whose perspectives and practices they do not share and cannot admire.

Increasing teacher-to-teacher interaction has the potential to make the politics of the school more visible, as new aspects of school and classroom life are legitimately open to scrutiny, debate, and decision. To contain conflict, teachers and administrators may be inclined to reserve joint deliberations for those arenas in which agreement is most likely, arenas that may have only marginal significance for the lives of either students or teachers.

Overcoming isolation: primetime. Creating opportunities for greater teacher contact and connection may lead teachers to pursue new courses of action and

support one another in the attempt to advance the prospects for students' success. One of the strongest and earliest initiatives by Brandonburg High School to encourage regular teacher contact is a program known as primetime. Originally a weekly late start for students, designed to facilitate staff development, primetime Wednesday was a successful and popular venture with both students and teachers. After a new principal assumed leadership at the high school, primetime Wednesday became simply primetime. The late start became an early dismissal, and the weekly time for teacher collaboration became a daily event. The high school student day now ends at 2.00 p.m., after seven teaching periods. The eighth period of the day is set aside for teachers to meet with students, with parents, with school improvement committees, with critical friends groups, or to work on other collaborative projects.

Although there has been some effort to structure the time more closely, for example, assigning one day for school improvement committee meetings and another for departments to focus on curricular alignment, informal conversations are equally valued. A walk around the building would reveal teachers engaged in myriad activities, from sharing thoughts about specific students, to gaining advice on a new course, to working through an advanced algebra equation with the physics teacher whose lesson will apply the related concepts. Both structured and unstructured endeavors generate a collective curiosity and interest among colleagues and counteract possible negative effects of the egalitarian norm. Problems are tackled collectively as a matter of course. Strong professional relationships between and among teachers create new norms of cooperation and begin to extend the definition of what it means to be a teacher. Teachers begin to see how their individual knowledge can be applied beyond their own classrooms to support curriculum, program, and policy. They begin to create a more expansive school culture that promotes individual growth at the same time as it advances the organization's capacity to grow more critical.

Lack of influence

Principals may construct decision-making processes that look on the surface like participatory processes in order to gain greater acceptance of administrative decisions and greater teacher satisfaction. However, they may be reluctant to extend genuine influence to teachers, assuming that teachers do not have the expertise to make valuable contributions, or because the administrators do not trust teachers to make decisions in the best interest of the school. Research suggests that this is often the case. Teacher respondents in a national survey indicated that previous participation afforded them little real influence (Bacharach *et al.*, 1988). Teachers may be reluctant to be involved in decisions and resentful of the time investment required when they perceive that their actual influence is limited (Bartunek and Keys, 1979; Bacharach *et al.*, 1988; Duke *et al.*, 1981). Nonetheless, teachers in the Bacharach *et al.* survey thought that they should be more involved in school and district decision making, especially with respect to issues directly affecting their immediate

teaching responsibilities. Researchers have speculated that when the influence relationships in a school remain unchanged, the benefits of collaborative processes will go largely unrealized:

There is little evidence that school based management alters influence relationships, renews school organizations, or develops qualities of academically effective schools. . . . School-based management generates involvement in decision making, but it does not appear to substantially alter the policy making influence of site participants generally, the relative influence of principals and teachers or the relative influence of professionals and patrons (Malen *et al.*, 1990, p. 304).

This concern over a lack of genuine influence was expressed by some Brandonburg teachers regarding the school improvement committees. They feared they might act merely as fronts authorizing decisions already made by the principal or other administrators. This kind of "rubber stamp" approach allowed for the appearance of collaboration, without genuine influence. Says a teacher:

Many people think that these committees are just a facade for administrators to make happen what they planned all along. And that it's just better to have a group of teachers say, "This is what you have to do," than to have the leader say, "This is what you have to do."

In order for participatory structures to be effective, teachers need to be able to trust the genuineness of the partnership.

Ambiguity about decision-making authority often results from the familiar double bind so many principals experience. Although encouraged to include others in the decision process, their own positional authority and its attendant expectations make distributing influence risky business. Even when the authority to decide is shared, the blame for a bad decision still falls to the principal. Faced with these potentially negative consequences, school leaders find themselves crafting partial solutions that may, in fact, reinforce the very norms and habits they are attempting to change. The high school principal elaborates:

In this building the staff is responsible and accountable for decisions regarding curriculum, assessment, and governance. The superintendent and Board of Education have supported that. And yet, in this building, when a decision needs to be made. . . . the principal still has the authority. Our Board of Education and policy speak of that as well. However, through the school improvement process, decisions are made through a very systematic process. So I guess in some respects the principal is still making the decision, but I've done it through the process of school improvement.

Schools that want to build collaborative shared decision processes need to attend to more than just changing school culture and norms. There are structural difficulties that need to be clarified and addressed. Traditional bureaucratic authority structures designate a single decision maker who has not only decision authority but also accountability. When decisions go awry, it is clear who is to blame. For principals to be willing to hand over more genuine decision influence to teachers and other organizational participants, structures need to be in place that share both the rewards for successes, but also share blame when unwise decisions lead to unintended negative consequences.

Poor conflict management strategies

Conflict is an inevitable part of any group's functioning. One of the factors that gets in the way of schools becoming learning organizations is the mismanagement of this conflict due to poor skills and negative attitudes toward controversy. The avoidance of conflict can leave a persistent undercurrent of tension that, like a low-grade fever, saps the organization's energy and enthusiasm for its tasks. On the other hand, open conflicts that are handled badly can lead to on-going hostility and animosity among participants. Either alternative deprives the school of the potentially beneficial outcomes of conflict (Hart, 1998). Collaborative relationships enable a school to take advantage of differences and use them as strengths (Barot and Raybould, 1998). Learning to appreciate and make constructive use of the differences in perspective and experience of various organizational actors helps to create a context where trust and respect are cultivated rather than depleted. Respect and trust then become the foundation on which future collaborative experiences are built.

The staff at Brandonburg High School speak about the difficulty of trying to bring about school improvement. Their corporate experience with reform has produced tensions, unresolved conflicts, and unanticipated problems. Administrators and teacher leaders constantly struggle with the balance between harmony and creative tension. The advantage of collaborative problem solving is that it includes many people, and thereby broadens the base of ideas. However, this broader range of options to consider can result in confusion and a sense of chaos. Brandonburg's principal seems to recognize that conflict may be a necessary antecedent to institutionalizing new habits of school life. He sees dialogue and debate as crucial to the change process. The principal both enables and provokes change by asking challenging questions such as, "Why are you teaching that? How do you know it's good? What are students supposed to know? Should it only be the teacher who determines whether or not a course is offered in a single or double block?" Teachers differed in their opinions about whether the level of conflict at Brandonburg was invigorating or debilitating. One teacher remarked:

The way that I feel here is that teachers run the show. It's just another part of your day. If I don't help run the show, then someone's going to run my show, and I don't like that. I want to be part of the process. That's why I wanted to come here. Here I am pushed to think. The work, it's expected and it's a challenge.

Formal training regarding the Coalition of Essential Schools and even the implementation of coalition principles at Brandonburg High School is strictly voluntary. No teacher is required to accept or employ coalition endorsed practices. Some teachers are self-acclaimed skeptics. These teachers see the coalition principles as overly concerned with socialization and processing skills, at the expense of a focus on rigorous content-based standards. In their opinion, the school should be more accepting of traditional teaching practices that are aimed at equipping students with the knowledge needed for more advanced levels of formal education.

One coalition principle has sparked a continuing pedagogical debate at Brandonburg. The controversial idea is that teachers should concentrate first on being generalists attending to all aspects of a student's school experience and not only to the student's mastery of a given area of study. Only after teachers have considered the broad educational perspective should they think of themselves as subject area specialists. At Brandonburg, teachers are asked to reevaluate their relationship to the subject they teach. They are asked to define themselves not as subject specialists, but as professional teachers. It is not enough for them to be knowledgeable in a single subject. They must also recognize how their subject fits with other subjects and be willing to assume responsibilities outside their major area of expertise. The classroom teacher must be at least conversant in several disciplines. In this regard, the emphasis is changing from teaching about a subject to teaching from a subject.

Many Brandonburg teachers found this idea appealing, but not everyone agreed. Some teachers believed that their energy and attention were improperly channeled by this emphasis. In their view, the generalist principle required that they be spread too thin.

There's that feeling that nobody has any definable turf. It's [supposed to be] acceptable for an English teacher to grade a paper for historical content, and for a history teacher to grade a paper for grammar. I have a great deal of trouble with that for the simple reason that I really do believe that I know my field; and I know what I'm looking for, and what is important in terms of my field.

This shift in emphasis has resulted in unresolved tension among the faculty. The tension underlies numerous concerns such as mistrust of an emphasis on process over content, disagreement with favoring more interactive teaching strategies over directive approaches, worries that subject integration will result in some disciplines controlling and overwhelming others, a belief that background skills and knowledge cannot be as effectively developed in interdisciplinary activities, and concern that students will not be successful on standardized subject-based tests if they spend time on interdisciplinary work.

Maintaining a constructive level of conflict requires not only skill but an open, respectful attitude as well. Many teachers are uncomfortable with any level of conflict and prefer isolation to the tensions involved in joint work. Few teachers have been trained in negotiation skills that can keep the focus on disagreements about ideas and away from personal attacks or the division of the school into warring camps and hostile factions. Faculties need carefully structured forums as they begin to develop new norms of practice. They need training in the attitudes and communication skills required of them in these new discourse communities. With these skills in place, debate and conflict can become positive elements in the school culture.

Conclusion

New views of cognition encourage us not only to think differently about how students learn, but about how schools can learn as well. The knowledge possessed by a school is socially constructed and specific to its particular context. It is also

distributed throughout the school as organizational members act on behalf of the organization. New organizational learning is built on the foundation of the existing knowledge and beliefs of the school. Organizational knowledge is embedded in the philosophies the school espouses and those it enacts in its structure, teaching practices, discipline codes, curriculum, stories, and ceremonies.

At Brandenburg High School, organizational learning has been enhanced as administrators and teachers at the school have discovered ways to share their expertise, to make their thinking explicit, and to articulate their goals. Collaboration has been a central means for achieving these ends. And yet, collaboration continues to present its own challenges in the face of long held norms of autonomy and equality among teachers and the difficulties inherent in changing beliefs and practices. Likewise, Brandenburg teachers and administrators attest to the costs of group problem solving in terms of time and effort and they speak about managing the emotions that are unleashed in the process. Developing means to conserve energy and manage conflict will be vital to Brandenburg's continued growth.

Even though collaboration is not simple or easy, it can be valuable. As schools struggle to reinvent themselves to respond to the need of a changing world, collaboration may provide the mechanism for schools to become learning organizations. As Brandenburg teachers continue to collaborate with one another, they create a context in which existing beliefs and knowledge are challenged and, in some cases, transformed. From improvements in attendance procedures, to modifications of the student scheduling process, to designation of grade level academies, to honing the school improvement committee foci, all in concert with the continuous development of various instructional strategies, Brandenburg continues to grow smarter as a school by solving problems better, creating more useful and productive routines and procedures, and improving on various teaching approaches. As one teacher suggests:

I think Brandenburg has given me the opportunity to explore new avenues. This transition in my thinking about what history class was all about, that didn't happen in one week or one year. I struggled with it a number of years before I actually tried to change my practices. This is my 23rd year of teaching. I imagine I'll be struggling with that at 30 years.

The commonly considered indicators of a school's growth and effectiveness place Brandenburg in good stead. The school's graduation rate is 86.8 percent, up from an average rate of 84.5 percent. The percentage of students going on to four-year colleges and universities has increased from 48 percent in 1986 to 64 percent in 1997. The school's student attendance rate has shown consistent improvement from 90.4 percent in 1995 to a rate of 94 percent in 1999. Standardized test scores meet the state and national averages, despite the fact that average income of district residents and per pupil property valuation is below average for the county. Data indicate that students are increasingly taking advantage of the options available to them. Enrollment in Advanced Placement classes has increased from 18 students in 1989-1990 to 334 students in 1998-1999. Student requests for double blocked classes have increased from 376 in 1992-1993 to 1,274 in 1997-1998. The number of students opting for five

years of mathematics has doubled in the last four years. Further, the percentage of students attending the vocational schools has risen for each of the past five years, from 13.4 percent in 1994 to 21 percent in 1998. These data suggest that Brandenburg students choose to come to school each day and, once there, are actively engaged in learning.

Brandenburg teachers and administrators have accepted the fact that learning and improving, both individually as professionals and collectively as an organization, is never over. Their actions are progressive and the resultant growth is ongoing. One teacher remarked:

I like the fact that whatever you're doing is not the end product, there's always going to be something else. It's not that what you're doing isn't important, but don't feel like it's going to be the final solution. I like the anticipation of improved learning, expecting to be challenged again and again. There's always something coming.

Teachers have been encouraged to travel outside the district, to observe other school practices, to talk to other teachers, and to expand their own teaching skills. Says a teacher, "This is a really smart, hardworking staff. It truly is. Professional development is very important here. Everybody here is always learning. I think that inquiry is part of the norm, always seeking new ideas, trying to make things better."

As the school's administrators collaborate with teachers in solving the school's problems, they make their thinking visible and make explicit the values and goals that guide their decisions. These are valuable learning experiences, and yet, in order that these experiences do not become sources of resentment, teachers must begin to trust the genuineness of their influence. Brandenburg administrators must find ways to clearly define and articulate the parameters of decision-making authority on behalf of the reforms they seek. As both principals and teachers participate in group problem-solving processes and as they reflect on those experiences, not only are their solutions superior, but the problem-solving capacity of the school is improved. As teachers with valuable knowledge and skills are involved in solving problems that affect them, organizational commitment and motivation are likely to increase. Thus, collaboration holds promise, not only for making students smarter, but for making schools smarter as well.

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