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Richard Halverson

This paper details some of the implications of a distributed leadership perspective on how leaders create professional communities in schools. Although professional community is constituted by and contributes to the work of teachers, local school leaders bear primary responsibility for establishing the conditions for professional community in schools (Bryk & Schneider, 2002; Louis, Kruse, & Bryk, 1995; Halverson, 2004). A distributed perspective on school leadership practice helps us understand how the central *tasks* of instructional leadership are enabled and constrained by the context of practice (Spillane, Halverson, & Diamond, 2004). There are two primary dimensions of task distribution: (a) *social distribution* describes how tasks are defined, shared, and co-constructed among actors in schools; (b) *situated distribution* describes how structures are configured to shape the practices of teaching and learning in schools. Instructional leaders use a variety of tools to shape social and situated task distribution in order to create school contexts that improve teaching and learning.

Professional community results from the intentional coordination of social interaction among teachers through the design of structures in situations of practice (Halverson, 2003). These structures, or *artifacts*, provide the key tools leaders use to develop professional community. As discussed further in the Method section, the term *artifact* here refers to the programs, procedures, or policies leaders use and design to influence the practice of others. Although structural changes are insufficient for changing school culture, well-designed artifacts—such as discussion groups, collaborative curriculum design efforts, and formative assessment policies—provide necessary tools for leaders to use in improving instructional practice across schools. The main contribution of this paper is a typology of artifacts used by school leaders to get change started, to maintain change, and to coherently link change efforts with other initiatives in schools.

Loose Coupling, Professional Community, and Artifacts

Why does professional community play such an important role in school reform? The key to understanding how schools engage in, and more important, resist change is found in the organizational structure of schooling. During the ’70s and ’80s, organizational theorists applied the concept of *loose coupling* to understanding the structures of schools. Weick’s (1976, 1996) and Meyer and Rowan’s (1983) work traced how schools’ loosely coupled organizational structures evolved to allow teachers and specialists considerable autonomy in addressing local problems of teaching and learning. While teachers assumed responsibility for practices within the classroom, administrators worked on school-level conditions, such as controlling the entrance and exit conditions for students and staff and buffering teachers from external interference (and inspection). School cultures developed to reinforce the loose coupling between administrative and instructional practice—formally, through collective bargaining agreements that preserved teacher autonomy, and informally, through practices emphasizing the teacher’s role in curriculum choices and resisting unwelcome intrusions into the classroom.

The power and success of loose coupling in schools should not be underestimated. Generations of teachers and schools have flourished in a culture protecting their autonomy to select the opportunities to conduct and improve their own practice. Loose coupling resulted in organizations that could rely on teacher expertise to adapt to changes and problems in student and community environments without disturbing instructional practices (Weick, 1996). The disadvantages of loose coupling, however, were exposed by systemic reform (Elmore, 2002). Disaggregation of high-stakes test results, for example, demonstrated inequities in student achievement both across and within schools. Suddenly, an organizational strategy that relied heavily on volunteerism and teacher initiative for systemic instructional change seemed archaic and even insidious. The traditional and cultural practices of loosely coupled systems acted to prevent the kinds of direct inspection (and improvement) of instructional practices required by systemic reform.

Restructuring provided an important initial step toward tightening the coupling of administrative and teaching practices. Comprehensive school reform programs, for example, gave schools structures for rearranging instructional practices and professional development to improve student learning. However, the cultures that had evolved around loose coupling thwarted restructuring efforts in many schools. Elmore, Peterson, and McCarthey (1996) reported that new school structures did not necessarily lead to new practices. This pattern of compliance with surface features of innovations has also been seen at the district level (Spillane & Thompson, 1997; Spillane, 2000). New structures seemed a necessary but insufficient condition for improving learning across schools.

Through the 1990s, professional community emerged as a critical aspect of systemic reform in loosely coupled systems. Professional communities enable schools to engage in and act on a shared understanding of practice. Strong professional communities in schools that promote collective responsibility for student learning and norms of collegiality among teachers are associated with higher levels of student achievement (Lee & Smith, 1996; Little, 1982; Louis, Marks, & Kruse, 1996; Newmann & Wehlage, 1995). By developing a shared understanding of the affordances and constraints of existing instructional practices, a school's professional community provides the capacity for collective action. Most important, however, professional communities reflect the levels of relational trust among the adults in schools (Bryk & Schneider, 2002; Halverson, 2003). Trust is a critical resource for reforming loosely coupled systems. Establishing professional community helps build the kind of relational trust in schools that helps teachers set aside the structures that protect their autonomy and relax the cultural barriers to collaborative action.

This paper extends and refines an argument presented in an earlier paper (Halverson, 2003) on systems of practice. That paper suggested that professional community is a special form of relational trust that arises from professional interaction around setting and solving the core problems of instructional practice. The relational trust upon which professional community rests can be developed in systematic ways. Coleman (1988) described the stages in the development of trust: first, actors need to *interact* around common interests; second, these interactions lead to the development of *obligations* between actors; and third, actors have the opportunity to *fulfill* their obligations. The role of school leaders in building professional community is to create structures, or *artifacts,* that facilitate certain kinds of social interaction in schools (Halverson, 2003) and to foster and sustain relational trust around issues vital to

instructional improvement. In other words, professional community is a form of organizational trust that results from the design of certain forms of interaction through which professionals incur and satisfy obligations in order to improve student learning.

In this paper, I argue that leaders create the conditions for strong professional communities by building or adapting structures to initiate interaction, facilitate the development of obligations, and provide systemic feedback on the degree to which mutual obligations have been met. Leaders extend existing professional communities to new areas by linking structures that build on previous levels of trust. Developing relational trust demonstrates how—when structures and practices build on each other—new practices can emerge even in institutions defined by prevailing institutional structures. If professional community is the path for tightening the coupling between leadership and instruction in schools, then this research aims to provide leaders and teachers with a vocabulary for understanding the tools necessary for making the transition from our current schools to the next generation of schools.

Method

A key function of school leadership is to influence the local practices of teaching and learning (Spillane et al., 2004). In part, leaders seek to influence the practice of others through the *artifacts*—or programs, policies, and procedures—they develop and deploy (Halverson, 2002). In schools, artifacts include any entities designed to influence the practice of others. At the district and state level, policy artifacts such as high-stakes accountability policies, incentive programs, and teacher union contracts provide constraints on (and opportunities for) local practice. In schools, leaders build and adapt artifacts such as daily schedules, faculty meetings, and meeting agendas to shape instructional practices. Although people cannot be regarded as artifacts from a distributed leadership perspective, the roles they fulfill in organizations, as shaped by their job descriptions, certainly qualify as powerful artifacts that leaders use to pursue instructional agendas. The concept of an artifact as an intervention designed to shape the actions of others is rooted in human-computer interaction and activity theory research (cf. Cole & Engeström, 1993; Norman, 1991). Designers build features into artifacts to shape practice in intended ways. I use the concept of *artifact* instead of the more generic term *structure* because an artifact provides a tractable and identifiable unit of analysis. Analysis of the features of artifacts provides an opportunity to examine how designers thought about the practices they intended to affect (Halverson, 2003, 2004). My argument uses artifacts to trace the ways in which leaders think about, spark, and direct relational trust-building efforts in schools.

The argument developed here relies on three prior studies:

1. A 3-year study of how leaders in an urban preK–8 school created the conditions to improve student learning (Halverson, 2002, 2003);

2. A 2-year study of how an urban school leader created the conditions to improve learning for students who traditionally struggled (Halverson, 2004; Halverson & Rah, 2005); and

3. A 1-year study of how school principals developed and adapted teacher evaluation tools to improve teaching and shape professional norms (Halverson, Grigg, Prichett, & Thomas, 2005).

Based on extensive interviews, observation, and document collection, these three studies revealed the importance of professional community in creating the conditions for school change. All data were coded to identify (a) the artifacts involved in the work of school leaders, (b) the degree to which leaders adapted existing artifacts to new and emergent purposes, and (c) the degree to which artifacts interacted with each other and with social norms to create emergent forms of interaction.

Findings

The three studies described above demonstrated that leaders required different kinds of artifacts to create and maintain professional community. In the remainder of this paper, I first describe the leadership practices at work in the three school cases. I then lay out a typology of three kinds of artifacts leaders use to shape social interaction: (a) artifacts that act as catalysts in the creation of professional community (*catalytic artifacts*); (b) artifacts that build on the effects of catalytic artifacts (*compounding artifacts*); and (c) artifacts that foster instructional program coherence (*coherence artifacts*).

Case 1: Instructional Leadership in an Urban School (Halverson, 2002, 2003)

When Principal Therese Williams[1] became principal in the late 1980s, Adams School had one of the worst student achievement records in Chicago. Williams faced considerable challenges in reshaping instructional practices at Adams over her 12 years as the school's principal. Adams was a K–8 school with more than 1,200 students (98% eligible for free or reduced-price lunch; 99% African American) in two buildings—a main fortress-like building for Grades 5–8 and a smaller barracks-like building for Grades K–4. The staff in the two buildings barely tolerated each other, and therefore Williams saw her initial task as fostering a sense of common purpose among staff. To build a basic level of trust with and among staff, she focused on enforcing behavioral standards within the two buildings and created many opportunities for staff interaction.

Williams and her staff recognized that collegiality needed to pay off in improved student learning. Their analysis of test scores from the early '90s led to a general agreement that early literacy provided a critical instructional gateway to academic achievement in later grades. Instead of relying on a new mandated curriculum that teachers could subvert or ignore, Williams and her literacy coordinator started a program to help staff recognize the nature of the problem in literacy instruction and play a role in shaping a solution. The Breakfast Club was designed as a monthly opportunity structured to allow teachers time to discuss recent research in early childhood literacy. Williams provided a hot breakfast for teachers and stayed in the background as they struggled to understand research articles in light of their own practice. The Breakfast Club began as a voluntary program with low attendance (5–14 staff attended 1st-year meetings), but attendance increased steadily after word got out that the club offered a valuable organizational resource. As one Adams teacher remarked:

[1] All names in this section are pseudonyms.

> We found out that we enjoyed talking with one another, that it was a benefit. Because we don't have a chance to talk with one another—if you leave your class and start talking to one another, teachers don't have that luxury. So this gave them a chance to talk with one another.

In the 2nd and 3rd years, teachers attending the Breakfast Club began volunteering to try the research-based practices in their classrooms and report back to the group, providing a valuable form of real-world feedback on the research. A group of middle school teachers also launched a Breakfast Club–like program to discuss the adolescent identity issues of their students. Also in the 3rd year, the literacy coordinator and the teachers proposed a balanced literacy approach as the curriculum for the school's early grades. The most important outgrowth of the Breakfast Club, however, was the realization that the school needed structures to provide internal feedback on its program design work. The standardized test scores provided neither sufficient nor timely information for program refinement. As the Adams literacy coordinator noted:

> We realized that the tests themselves didn't give us much information about what we could do to improve our scores—mainly because we received the results well after we could do anything about it. We thought about a more frequent assessment program . . . that would help us tell where the children were.

Several teachers worked with the literacy coordinator to develop a series of 5-week assessments to provide performance benchmarks for teachers. Initially, teachers ignored the results of the assessments because the first benchmark tests did not obviously relate to their curriculum or the standardized test. After several iterations, however, teachers reverse-engineered the standardized test to construct assessments that provided increasingly accurate predictions about how students would fare on the language arts aspects of the test. After 3 years of development, the 5-week assessments were recognized by Adams teachers as important sources of feedback for instruction.

The Breakfast Club and the 5-week assessments are only two of the artifacts put into play at Adams. However, it should be noted that Principal Williams sought to limit the number of artifacts developed so as not to overextend the school's resources. She was committed to letting the school's chosen artifacts mature. Her main tool to prevent program bloat was her use of the district-mandated school improvement plan. The district required a plan that linked discretionary budgetary resources to explicit instructional goals. Williams used the planning process as a framing tool for reform within the school. Teachers were required to justify the need to create new artifacts or continue supporting existing artifacts, and the ensuing public discussions served to inform the school community about the instructional priorities. Williams designed the school improvement plan to link artifacts to outcomes so that teachers, parents, the district, and the local school board could see the rationale for Adams' current instructional investments. The professional community developed at Adams supported leaders' efforts to build new artifacts at the point at which existing artifacts left off and ended up improving language arts learning for students across the school.

Case 2: Leadership for Social Justice (Halverson, 2004; Halverson & Rah, 2005)

Schools provide blunt instruments for redressing social inequality. Even though recent educational policy work has consistently allocated resources and created guidelines for assisting students who struggle in schools, the obstacles to improving learning for all students are embedded in existing systems of practice. Deb Hoffman, principal of Franklin Elementary School, recognized that traditional service delivery models often perpetuate the very obstacles to learning they were originally designed to overcome.[2] Sparked by a district strategic planning report that suggested reducing class size and reforming service delivery, Hoffman used a variety of artifacts to develop a complex integrated service delivery (ISD) model, which required challenging and reshaping existing practices at multiple levels. Principal Hoffman commented: "If somebody said 'cite the three things that changed Franklin school,' I would say reallocating resources to reduce class size, professional development, and building the capacity of the staff." The ISD model offered an organizational approach to reshaping traditional pullout strategies for special education, English-as-a-second–language (ESL), and speech and language pathology students. The central strategy of ISD was to reduce class size by pairing special education and dual-certified teachers[3] with classroom teachers to provide services within regular classrooms. Achieving the goals of ISD required Principal Hoffman to acquire additional resources; redesign hiring, student assignment, and the professional development program; and explain the changes in service delivery to an initially skeptical community.

Franklin is a K–2 school in Madison, Wisconsin, with about 360 students (60% White; 25% eligible for free or reduced-price lunch) and 60 staff members. In 2002, Franklin also had a significant population of Hmong students who required bilingual support. Shortly after Principal Hoffman arrived in 1997, she realized that the very students who had the most trouble reading and writing were being pulled out of the classroom for support services. These students, Hoffman reasoned, needed regular classroom experience more than the children who remained in the classroom. Why not, then, reverse service delivery to bring specialists to students rather than students to specialists? Principal Hoffman credited her staff with working together to reform service delivery practices:

> I would assess [the teachers] I had to work with as incredibly strong. So that kind of fueled me in confidence as far as what they were able to manage. I had a lot of confidence that they could handle it. Even without any other support, I thought they could do it.

Principal Hoffman realized the change process would need resources and gathered a team of interested teachers in early 1998 to craft a U.S. Department of Education Comprehensive School Reform (CSR) grant proposal to restructure service delivery. Franklin received the CSR grant in fall 1998, and Principal Hoffman used the master schedule to reassign teachers, specialists, and students to smaller class sizes; worked with her staff to build a professional development program focused on differentiated instruction; and launched new initiatives to hire a Hmong bilingual resource specialist and new dual-certified teachers to fill the expanded classroom sections.

[2] All names in this section refer to real people and schools.
[3] That is, teachers certified in both classroom and special education teaching.

Many teachers and specialists struggled initially with working together to plan learning opportunities for children. Hoffman's challenge to existing service delivery practices prompted one teacher to write: "Instead of a kinder, gentler and more open school, the situation here is more volatile than ever. Do you think this atmosphere is best for kids?" Parent and community members also voiced initial, and public, disapproval. Principal Hoffman continued to work with her staff and to conduct meetings to explain the advantages of ISD to parents accustomed to prior service delivery models. After the initial resistance, most Franklin parents and teachers began to realize the value of ISD, and the student achievement scores for all students improved.

Principal Hoffman's work illustrated how artifacts already in use could be repurposed to structure changes in professional community in the school. She realized that the changes in practice would go only as far as the teachers allowed, and she developed a strategy to help teachers learn new practices, she hired new teachers who could work together in classroom teams, and she used the student assignment process to create optimal matches of teachers, specialists, and students. ISD represents a large artifact that coordinates and repurposes many smaller artifacts to reshape how a staff engages children in teaching and learning.

Case 3: Formative Feedback to Improve Reading (Halverson, Grigg, Prichett, & Thomas, 2005)

Rural and small-town school districts across the U.S. have faced a continuous history of downsizing, diminishing resources, and lower enrollments over the past 30 years. Leaders in rural districts need to understand how to reallocate existing resources and redesign existing artifacts to improve student learning. Pearson Elementary School,[4] located in a small town in a rural Midwestern district, opened as a K–6 school in a building formerly occupied by a junior high school. Kay Stein's appointment as principal of Pearson stretched her responsibilities, as she also served as principal of several smaller rural schools. Stein led the Pearson teachers and staff in assembling a powerful configuration of artifacts designed to generate and use achievement data to improve reading scores across her schools. Principal Stein commented:

> The thing I love about data is that it helps me be more of an instructional leader. If I do focus on it, it helps me be very intentional about what I expect in an observation, what my expectations are for my school. I can get data on just about anything we want to talk about, but then it becomes weeding through it, and what's the important data. What is it—some data we'll get and it doesn't give us a picture of anything and we kind of start to create a picture. "Okay, well, it says this," well, how do we know it says that?

Principal Stein integrated the use of data across her work as a school leader and teamed with teachers to repurpose in-house expertise to develop their data-based literacy program.

Like Principal Hoffman at Franklin, Pearson's Principal Stein worked with her staff to submit a CSR grant proposal. The proposal was ultimately successful, and the project effectively increased staff capacity to collectively engage in instructional improvement. During the latter stages of the grant, the staff targeted literacy skill development as the main focus of their instructional design efforts. The principal and the Title 1 teacher led the development of a

[4] All names in this section are pseudonyms.

sophisticated, locally designed process for measuring the effects of literacy program design on student learning. The Title I teacher, a veteran reading specialist with training in the Reading Recovery program, worked with teachers for 6 years to redesign the Pearson K–2 reading program. The cornerstone of the program was Guided Reading (GR), a program that helps early readers develop effective strategies for processing text at increasing levels of difficulty (Fountas & Pinnell, 1996). GR relies on *running records*—individualized, ongoing formative student assessments—to help teachers organize groups for reading activities. The Title I teacher made room in her schedule to work with groups of students and teachers in each classroom in order to get a sense of teachers' practice and students' performance. She began assembling binders of running records information to track student progress over time, and she worked with teachers to supplement the GR assessments with formative feedback tools from Reading Recovery and other programs such as the district-supplied Developmental Reading Assessment (DRA).

Taken together, these data provided a powerful resource for measuring program quality. Still, the data did not constitute formative feedback until teachers used the information in their instruction. Pearson's leaders realized the value of structured opportunities for reflection in making formative data useful. The Title I teacher met weekly with each of the Grade 1–2 teachers and monthly with all the K–4 and special education teachers to discuss and disaggregate the data. Professional time dedicated to discussion of data helped develop a strong professional community around literacy instruction and helped identify problems with the existing program. This complex system of formative measures served several key functions in the Pearson instructional program. First, it helped Pearson staff develop a sense of shared ownership in the transformed practice. Although K–4 teachers continued to work in classrooms, they felt more connected to each other's practice as a result of participating in the GR assessment system. Second, this professional community helped staff to use the formative feedback as an effective measure of program design. When teachers began to realize that GR was not addressing the needs of several students, one teacher shared her experience at an Orton-Gillingham phonics-based program workshop. After several other teachers attended the workshop, the Pearson team began to integrate Orton-Gillingham activities and assessments into the literacy program for selected students. Finally, the formative assessment program helped staff anticipate the results of the state exam. The Title I teacher described how she was "rarely surprised, because the running records help to determine where the children should be on the DRAs, which predict the [state exams] well."

Analysis

Over the course of their reform efforts, all three schools demonstrated strong professional communities in action. I observed how leadership-initiated opportunities for staff interaction blossomed into vibrant professional communities that addressed chronic problems of practice. Each school community was able to (a) frame and solve problems of practice effectively and (b) learn from both failure and success to define subsequent rounds of problems to solve.

In their study of expert principals, Leithwood and Montgomery (1982) noted, "When the gap between staff competence and task completion is large, the principal is prepared to sacrifice smooth interpersonal relations for the sake of a good program" (p. 320). In contrast, principals at each of the case study schools put program quality first without sacrificing interpersonal relations; rather, they used artifacts to create *alternative* interpersonal relations that would

establish the capacity for collective action. Although none of the principals began with the intention of developing professional community, communities resulted from their efforts to address the key problems of instruction in their schools.

These abbreviated case histories of reform show the range of artifacts leaders used to spark instructional changes in their schools. In prior work (Halverson, 2002, 2003), I proposed a typology for categorizing artifacts according to their origins:

- *Locally designed artifacts* are created by leaders and teachers to shape local practices.
- *Received artifacts* come into the school community already developed by identifiable sources (e.g., districts or curriculum developers) and are adapted by leaders and teachers to local uses.
- *Inherited artifacts,* such as the academic calendar and the disciplinary organization of the curriculum, predate the work of teachers and leaders and provide the context for the local system of practice.

Building professional community requires leaders to both develop new artifacts and use received artifacts, in the context of inherited artifacts, to create legitimate occasions for staff interaction (Halverson, 2003). However, analyzing how leaders build on emergent trust and capacity for collective problem solving and link instructional improvement programs into a coherent whole requires another set of distinctions among artifacts. Here, I propose a further typology of *catalytic*, *compounding*, and *coherence* artifacts to capture how leaders *sequence* instructional improvement activities that, in the end, develop professional community.

Catalytic Artifacts

Catalytic artifacts are used to spark initial conversations in schools that are reluctant to engage in professional community. Catalytic artifacts such as discussion groups and trust-building exercises create opportunities for staff interaction to overcome the isolating effects of loose coupling in schools. Both received and locally designed artifacts can act as catalysts for professional community, but they do so in different ways. Whereas the features of locally designed artifacts are built to catalyze change by the people who will use the artifacts, the features of received artifacts are built by others to spark change from a distance, and their usefulness depends on the extent to which they can be adapted to local priorities.

Principal Williams used several locally designed artifacts simply to catalyze civil interactions among the Adams staff—a first step in developing the capacity for collective change. This need to establish basic social norms for interaction was not as pressing at the Franklin and Pearson schools. Franklin teachers already had developed significant abilities to engage in collective curriculum design, and when Pearson initially opened, the new group of teachers was selected, in part, for their willingness and ability to participate in collaborative work. Still, both Principal Hoffman at Franklin and Principal Stein at Pearson used trust-building activities as catalysts for the development and implementation of CSR grants in their schools.

CSR grant development processes acted as received catalytic artifacts that provided a focus for instructional improvement at Franklin and Pearson. The grant development process created rich opportunities for leaders and staff to recognize how their collective resources could help them address a problem together; assembling the different pieces of the grants gave members of the design teams the chance to participate in a successful common endeavor. The trust developed through the collaborative grant-writing process enhanced the organizational capacity of leaders and teachers to enact the grants once received.

High-stakes accountability policies also acted as received catalytic artifacts. At Adams School, Principal Williams to used the academic press that came with high-stakes accountability to show her staff that the need for change was coming from outside the school as well as from within the school administration. As the Adams literacy coach explained: “I think the onset of [the state test] did something very interesting that almost forced us to work as a team.” This shift stemmed from Williams’ ability to appropriate a received artifact to bolster existing instructional initiatives and at the same time establish an organizational rhetoric that the leadership team was on the same side as her staff—that is, that the two groups could be united in a common effort to improve teaching and learning for students.

At all three schools, the professional community fostered by the appropriation of received artifacts allowed staffs to create the initial interactions, and satisfy the initial obligations, that created the trust necessary to tighten the traditional loosely coupled relations between administration and teaching staff.

Compounding Artifacts

Leaders used *compounding artifacts* to focus newly formed professional communities on making problems tractable and solvable. Compounding artifacts such as data reflection retreats and collaborative curriculum design efforts build on the prior efforts of catalytic artifacts by helping to convert emergent professional trust into authentic professional interaction. Adams School developed the 5-week assessments, for example, as an artifact to tap into the initial energy and focus provided by the Breakfast Club. Breakfast Club discussions encouraged teachers to experiment with new literacy practices in their classrooms. Teachers and leaders were uncertain, however, about how to proceed from their general insights to concrete steps for change. Teachers and leaders began talking about developing an assessment, based in the teaching standards, to test the degree to which new practices were helping teachers reach their instructional goals. The 5-week assessments built on and focused the insights of the Breakfast Club into a process that increased the capacity of the Adams professional community to make instructional problems tractable.

Leaders use compounding artifacts to *telescope* into problems of practice. *Telescoping* here refers to the ability of practitioners to focus in on certain aspects of a domain in order to allow the details of specific problems to stand out and become more manageable. Pearson’s leaders, for example, assembled a series of compounding artifacts to focus attention on what the school perceived as its key instructional problem: early childhood reading. But instead of facing the daunting, general challenge of “teaching children to read better,” Pearson leaders constructed a system of compounding artifacts that transformed the problem into “using what we already know about reading as a staff to build a more effective learning environment for children.” As

Principal Stein worked with her Title 1 coordinator to review the strengths of the existing reading program, it became clear that the program should be redesigned so that all students could benefit from the detailed assessment and support services provided through the Title 1 and special education programs. The Title 1 specialist worked with teachers to develop an innovative schedule for student assessment that would allow the Title 1 and special education teachers to engage in collaborative practice with the classroom teachers. Adapting several available formative assessment tools to provide detailed information on student learning, the specialists met weekly with each of the Grade 1–2 teachers, and monthly with all the teachers, to assemble assessment binders that tracked the progress of each student. The abundance of information generated on student achievement also allowed the staff to tweak the instructional program as it unfolded in order to improve learning opportunities. The Pearson staff used the process of developing a collaborative approach to reading instruction as an occasion to assemble a series of locally designed artifacts (the teaching schedule and assessment binders) and received artifacts (the formative assessments and redefined responsibilities for Title 1 and special education positions) into a complex system of practice that more effectively focused their existing instructional expertise.

Finally, compounding artifacts can be used to redirect existing instructional capacity. Franklin's veteran teaching staff had wide experience in posing and solving a variety of instructional problems. However, their problem-solving practices had led to divisions by professional specialization between classroom teachers and specialists. Principal Hoffman used the implementation of integrated service delivery as an opportunity to help bridge this divide, enabling teachers to bring their expertise into new, more collaborative domains. Hoffman's redesign of the professional development program helped the teaching staff work together and integrate the lessons of inclusive teaching practices into classrooms. Hoffman worked with her staff to design professional learning structures that reinforced the central design idea of collaborative teaching into a process that incorporated external expertise, opportunities for reflection and practice, and systematic feedback into the learning process. Hoffman compounded these training efforts by redesigning the new faculty position descriptions to seek new hires who already had dual certification in classroom and special education teaching. The high level of collaborative expertise at Franklin was thus recast into new forms of professional interaction that enabled the school to engage in a deeper understanding of ISD.

Coherence Artifacts

Leaders use *coherence artifacts*, such as school improvement plans and annual budgets, to link disparate initiatives together to establish and reinforce a shared vision of instruction. *Instructional program coherence* (Newmann, Smith, Allensworth, & Bryk, 2001) has emerged as a concept to describe how leaders create "interrelated programs for students and staff that are guided by a common framework for curriculum, instruction, assessment and learning climate and that are pursued over a sustained period" (p. 297). Developing instructional program coherence requires leaders and teachers to make a commitment to a common instructional framework and to use this framework to guide innovation and professional development. Leaders use coherence artifacts to rein in the often divergent initiatives at work in most schools in order to develop a shared framework to guide instructional practice. Commitment to a common instructional framework can reinforce the development and refinement of professional community by

extending the purposes around which community is developed to the whole school and by symbolically demonstrating the importance of core innovations to the wider school community.

Franklin's principal Deb Hoffman used the master schedule as an artifact to coordinate school resources into a coherent vision of instruction. After developing a series of catalytic and compounding artifacts to enhance her school's capacity for ISD, Hoffman used the master schedule as a core artifact to match teachers and students in effective instructional combinations.[5] The decision rules Hoffman used to construct the master schedule reflected her commitment to integrating the principles of ISD into the school's core instructional practices. First, she focused on placing students with special needs into classrooms with teachers and specialists. She used additional decision rules—such as a 15:1 state-mandated student-teacher ratio and a school-based rule limiting the special needs population of any classroom to 30%—to emphasize the other placement priorities. Once constructed, the master schedule served as a public enactment of how the Franklin commitment to inclusion played out in concrete, everyday practice.

School improvement planning provides a central coherence artifact in many schools. Most schools now engage in some form of mandated school improvement or strategic planning processes. However, under schools' traditional loosely coupled organizational structure, instructional change efforts are often isolated in the administrative realm as discussions that have little impact on classroom practice. The leaders in each of the case study schools recognized that school improvement planning was as important after changes in capacity had been achieved as it was before the initial course of action has been set. As coherence artifacts, school improvement plans help professional communities tie together a school's disparate artifacts into a coherent instructional plan. Time allocated for central planning helps teachers decide which initiatives are worthy of continuing, which need to be reshaped, and which abandoned. School improvement planning at Adams School, for example, provided a year-long process of agenda setting, data collection, review, and new plan development that brought teachers together to reflect on what was worth supporting in the school. The Adams language arts coordinator explained how teachers learned to become advocates for their interests:

> People need to stand up for themselves at the meetings, I can't stand for them. After many of the meetings, people would come up to [the literacy coordinator] and let her know things they wanted but didn't bring up, and [she] would say how they needed to step up and speak their minds at the meetings. . . . Everything is tied into the [school improvement plan] somehow, that's what gives it credibility in the school. The budget and the initiatives are all tied in; if you want to participate, you have to come early and stay late.

The Adams school improvement plan development process provided an umbrella for organizing the school's array of instructional programs as well as a symbolic representation of the school's instructional vision.

[5] For a more detailed account of the Franklin scheduling process, see Halverson and Rah (2005).

Discussion

The leaders discussed here recognized the importance of collaborative action in creating systemic change in their schools. They did not, however, emphasize the importance of creating professional community or tightening the coupling between administrative and instructional practices. As Adams' Principal Williams explained: "We began to believe in the importance of professional community when we realized that, it wasn't taking classes, but that it was when teachers started talking about their teaching that the scores started improving." The leaders' goals were to improve student learning, and their means were a variety of artifacts designed to build their staff's capacity for change. The case studies discussed here underscore the peril of designing for professional community as an end in itself (see, for example, DuFour, 2003). In particular, they suggest that professional community is more a by-product of addressing problems of teaching and learning than an outcome in itself.

Although the argument presented here suggests that artifacts play a key role in developing professional community, the artifacts have no power in and of themselves. The success of an artifact depends on how it is used. The value of artifacts as a focus for the study of systemic change is the window they open on how leaders think and act in practice. The typology of artifacts proposed here (catalytic, compounding, and coherence) is most helpful as a means of identifying stages in the development of professional community and school improvement. If successful systemic change in schools depends on tightened coupling of administrative and instructional practice, and if professional community is a key step in this process, then leaders need to know how to sequence activities to help create the levels of professional community necessary to make problem solving tractable.

Even if studying artifacts is fundamentally a means of determining how to better help leaders create professional community, such study can also lead to the design of better tools for subsequent use. In *Learning Policy*, David Cohen and Heather Hill (2001) argued that policies intended to influence complex instructional practices stand a better chance of implementation when designed to allow policy users opportunities to learn the requirements of the new policies. Though Cohen and Hill's focus is math reform in California, their conclusions are relevant to systemic reform of other kinds. Understanding how good school leaders use artifacts to develop and marshal capacity for systemic change can help both ends of the policy spectrum: policy makers can use this knowledge to build better tools for local use, and leaders and teachers interested in improving their practice can use this knowledge to guide their own development efforts.

Conclusion

This paper draws on data from three case studies to illustrate how leaders use a sequence of artifacts to establish and maintain strong professional communities. Although artifacts are necessary components of effective organizational change, by themselves they provide no guarantee that professional community will be created or maintained. The social capital resulting from professional community can be fragile and in need of continuous direction and maintenance. To avoid a relapse to the status quo of loosely coupled school organization, leaders and teachers need to preserve professional community by repurposing artifacts, shifting discussions to novel problems, and trouble-shooting problems as they arise. From a distributed

leadership perspective, artifact use and design illustrate the interaction of the situational and social distribution of leadership—that is, the need for artifacts to structure social interaction is the flip side of the need for social interaction to bring artifacts to life. The principles of artifact design offer school leaders valuable guidance in developing effective tools for building professional communities in their schools.

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