A Distributed Leadership Perspective on how Leaders use Artifacts to Create Professional Community in Schools

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Abstract

This paper explores a distributed leadership perspective on how leaders create contexts that build and support professional communities in schools. I argue that professional community results from intentional coordination of social interaction among teachers through the design of structures in a situation of practice. School leaders put these structures, or artifacts, into play to intentionally shape professional community in schools. The paper draws on several research studies on distributed leadership in urban, suburban and rural school districts to describe the range of artifacts used by leaders to engage in school-wide reform. The main contribution of the paper is a typology of artifacts used by school leaders to get change started, to maintain changes, and to coherently link change efforts with other initiatives in schools. The paper concludes with a consideration of artifact design principles to guide school leaders in developing useful tools for building professional communities in their schools.

Introduction

This paper details some of the implications for 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, 1996; Halverson, 2004). A distributed perspective on school leadership practice helps us understand 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 the structures are configured to shape the practices of teaching and learning in schools. Instructional leaders use a variety of tools, or *artifacts*, shaping social and situational task distribution in order to create school contexts that improve teaching and learning.

Professional community results from 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. Borrowed from research in cognitive psychology and human-computer interaction, the term artifact here refers to the programs, procedures or policies leaders use and design to influence the practice of others. While structural changes alone are insufficient for changing school culture, the paper explains how 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 the paper is a typology of artifacts used by school leaders to get change started, to maintain changes, 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 importantly, 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 (1976; 1996) and Meyer & Rowan's (1983) work traced how school's loosely coupled organizational structures evolved to allow considerable autonomy for teachers and specialists to address 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 in collective bargaining agreements that preserved teacher autonomy and informally through emphasizing the teacher's role in curriculum choices and resisting unwelcome intrusions into classroom practice.

It is easy to underestimate the power and success of loose-coupling in schools. Generations of teachers and schools have flourished with the 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 environment without disturbing instructional practices across the school (Weick, 1996). The disadvantages of loose coupling, however, were exposed by systemic reform (Elmore 2002). Disaggregation of high-stakes tests, 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 important initial step to 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. The cultures that evolved around loose-coupling, however, acted to thwart restructuring efforts in many schools. Elmore, Peterson and McCarthey (1996) reported new school structures do not necessarily lead to new practices, and this pattern of compliance with surface features of innovations was also 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 for systemic reform in loosely-coupled systems. Professional communities reflect an ability for a school to engage in and act upon 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 and Smith, 1996; Little 1982; Louis, Marks and Kruse 1996; Newmann and Wehlage 1995)**.** Through 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 importantly, however, professional communities reflect the levels of relational trust around instructional practices among the adults in schools (Bryk & Schneider, 2000; Halverson, 2003). Trust is a critical resource for reforming loosely coupled systems. Establishing professional community helps build the kinds of relational trust in schools that helps teachers set aside the structures that protect their autonomy and relax the cultural barriers for collaborative action.

This paper extends and refines the argument presented on Halverson's (2003) systems of practice argument. Halverson argues 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 (1986) describes the stages of trust development: 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 that build and sustain relational trust around issues vital to instructional improvement. Halverson suggests that leaders create structures, or artifacts, that facilitate certain kinds of social interaction in schools. 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 together 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 schooling.

Methods

A key function of school leadership is to influence the local practices of teaching and learning (Spillane, Halverson, & Diamond, 2001). 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 or 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. While 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 (c.f. Norman, 1991; Engestrom, 1993). Designers built 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. The analysis of artifact features provides an occasion to examine how designers thought about the practices they intended to effect (Halverson, 2003; 2004). Our argument uses artifacts to trace how leaders think about they spark and direct relational trust-building efforts in schools.

The argument developed in the paper relies on several recent ethnographic research studies including: 1) a three-year study of how leaders in an urban preK-8 school created the conditions to improve student learning; 2) a two-year study of how an urban school leader created conditions to improve learning for students who traditionally struggled; and 3) a year-long investigation of how school principals developed and adapted teacher evaluation tools to improve teaching and shape professional norms. Each study included extensive interviews, observation and document collection, and each study identified the importance of the professional community in creating the conditions for school change. All data were coded to identify the artifacts involved in the work of school leaders, the degree to which leaders adapted existing artifacts to new and emergent

purposes, and the degree to which artifacts interacted with each other and with social norms to create emergent forms of interaction.

Findings

The studies pointed toward how leaders required different kinds of artifacts to both create and maintain professional community. To get at the different kinds of artifacts involved, I first provide a brief description of leadership practices at work in the three school cases. Then I offer a typology of different kinds of artifacts to describe the range of functional tools leaders use to shape social interaction: catalytic, compounding and coherence artifacts.

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

When Principal Therese William (pseudonyms) became principal in the late 1980s, Adams school had one of the worst student achievement records in Chicago. Williams faced considerable challenges reshaping instructional practices at Adams over her 12 years as the school's principal. Adams was a K-8 school with over 1200 students (98% free and reduced lunch; 99% African-American) spread across two buildings, a main fortress-like building for grades 5-8, and a smaller barracks for k-4 children. The staff in the two buildings barely tolerated each other, and Williams saw her initial task as building a common sense of purpose among staff between the two buildings. To build a basic level of trust with staff (and among staff), she focused on enforcing behavioral standards within the buildings and created many social opportunities for staff to interact across buildings.

Williams and her staff recognized that collegiality needed to pay off in terms of improved student learning. Their analysis of test scores from the early 90s led to a general agreement that early literacy provided the difficult and critical instructional gateway that rippled across subsequent grade levels. 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. Breakfast Club was designed as 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 teachers struggled to understand research articles in terms of their own practice. The Breakfast Club was a voluntary program with initial low attendance (5-14 staff attended first year meetings), but attendance increased regularly after word got out that discussions included valuable organizational information.

Breakfast Club began as low-key, voluntary discussions that blossomed into a key organizational resource. As one Adams' teacher remarked:

> 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 second and third year, Breakfast Club discussions began to turn more toward teachers 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 began a Breakfast Club-like program to discuss the adolescent identity issues of their children. Also in the third year, the literacy coordinator and the teachers proposed a balanced literacy approach as the curricular program for

early grades in the school. The most important outgrowth of Breakfast Club, however, was the realization that the school needed structures to provide internal feedback for their 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 Five-Week Assessments to provide performance benchmarks for teachers. Initially, teachers ignored the results of the Five-Week Assessments because the first benchmark tests did not obviously relate to their curriculum or the standardized test. After several iterations, teachers reverse engineered the standardized test to construct exams that provided increasingly accurate predictions about how students would fare on the language arts aspects of the exam. After three years of development, the Five Week Assessments were recognized by Adams teachers as important sources of feedback for instruction.

While Breakfast Club and the Five-Week Assessment are only several of the artifacts put into play at Adams, Principal Williams fought against developing too many artifacts that would divert valuable resources across too many instructional goals. She was committed to letting the school's chosen artifacts mature. Her main tool against program bloat was her use of the district-mandated School Improvement Plan (SIP). 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 argue for the need for new artifacts or continuing support for existing artifacts, and these public discussions served to inform the

school community about the instructional priorities. Williams designed the SIP to link artifacts to outcomes so that teachers, parents, the district and the Local School Board to see the rationale for Adams' current instructional investments. The professional community developed at Adams supported leader's efforts to build new artifacts at the point where the previous structures left off, and ended up improving language arts learning for students across the school.

Case 2: Franklin School: 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 guidelines for students who struggle in schools, the obstacles for improving learning for all students are tacitly embedded in existing systems of practice. Principal Deb Hoffman recognized that service traditional delivery models themselves often served to perpetuate the very obstacles to learning they were originally designed to overcome. Her development of a complex Integrated Service Delivery artifact in Franklin Elementary School demonstrated how she used a variety of artifacts to challenge and reshape existing practices at multiple levels in her school. Principal Hoffman comments: "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." Integrated Service Delivery (ISD) presented an organizational approach to reshaping traditional "pull-out" strategies for special education, English as a Second Language, and speech and language pathology students. The central strategy of ISD was

to reduce class size by pairing special education and dual-certified teachers 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 WI with about 360 students (60% white; 25% free and reduced lunch) and 60 staff members. Franklin also had a significant Hmong student population who required bilingual support. Shortly after Principal Hoffman arrived as a first year administrator in 1997, she realized that the very students who had to most trouble reading and writing were also being pulled out of the classroom for support services. These students, Hoffman reasoned, needed the context of the regular classroom experience more than the children who remained in the classroom. Why not, then, reverse service delivery to bring specialist to students rather than the students to the 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.

Sparked by a district strategic planning report that suggested consider reducing class size and reforming service delivery, Principal Hoffman realized the change process would need resources and gathered a team of interested teachers in early 1998 to craft a Comprehensive School Reform 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 focused new hiring practices on acquiring a Hmong Bilingual Resource Specialist and dual-certified new teachers to fill the expanded classroom sections. Many teachers and specialists struggled initially in working together to plan learning opportunities for children. The heat generated by Hoffman's challenge of 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 as far as the teachers allowed, and followed a strategy to help teachers learn new practices, hired new teachers who could work together in classroom teams, and 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: Structuring Formative Feedback to Improve Reading. (Halverson, Grigg, Prichett & Thomas, 2005).

Rural and small-town school district across the US have been faced with 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 (all pseudonyms), in a rural Midwestern district, was opened in a small town as a K-6 school in a building formerly occupied by a closed Junior high school. Pearson principal Kay Stein's position was also stretched through her service served as principal of several smaller rural schools. Stein led the Pearson teachers and staff into 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 worked with teachers to repurposing in-house expertise to develop their data-based literacy program.

Like Principal Hoffman at Franklin, Pearson's Principal Stein worked with her staff to assemble and acquire a CSR grant that resulted in staff capacity to collectively engage in instructional improvement. During the latter stages of the Pearson CSR 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 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 organized her schedule to spend time working with groups of students and teachers in each classroom in order to get a sense of teachers' practice and student 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 alone 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 every teacher and monthly with the K–4 and special education teachers to discuss and disaggregate the data. Professional time dedicated to data discussion helped develop a strong professional community around literacy instruction and 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 of 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, we observed how each school demonstrated strong professional communities in action. We observed how leadership tasks that initially supported opportunities for staff interaction blossomed into vibrant communities of practice that addressed chronic problems of practice. Each school community was able to frame and solve problems of practice effectively, and was able to learn from both failure and success to define subsequent rounds of problems to solve. In their study of expert principals, Leithwood and Montgomery (1982) note, "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." (320) While each principal we studied was willing to make this sacrifice, the sacrifice itself took the form of using 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, their communities resulted from their efforts to address the key problems of instruction in their schools.

These abbreviated case histories 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. through districts or curriculum developers) and are adapted by leaders and teachers to local uses; and *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 artifact and use received artifact against the inherited context to create legitimate occasions for staff interaction (Halverson, 2003). However, analyzing how leaders build on the emergent trust and capacity for collective problem solving and knit together the instructional improvement programs into a whole cloth requires another set of distinctions between artifacts. Here I propose the sequence 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 the initial conversations in school communities 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. Principal Williams used several artifacts simply to create civil interactions among her staff. At Adams, developing the capacity for collective change first required that teachers could stand to be in the same room together. This need to establish basic social norms for interaction was not as pressing at either Franklin or Pearson schools. Franklin teachers already had developed significant abilities for collective curriculum design, and when Pearson initially opened, the new group of teachers was selected, in part, by their assent and ability to participate in collaborative work. Still, both Principals Hoffman and Stein used trust-building activities to launch their CSR development and implementation in their schools.

Received artifacts can also act as catalysts for professional community. The primary received artifacts here are high-stakes accountability policies which sparked Adams school, and to a lesser extent both Franklin and Pearson schools, to constructive action. Similarly, CSR grants were used by Franklin and Pearson leaders to prepare their school communities for change. The CSR grants acted as catalytic artifacts that provided a focus for instructional improvement at Franklin and Pearson. The grant development process creates rich opportunities for interaction that helped teachers come to a common understanding of the change process; assembling the different pieces of the grants gave members of the design team chances to fulfill obligations to participate successful in a

common endeavor. The trust developed through the collaborative grant writing process enhanced the organizational capacity of leaders and teachers to enact the grant once received.

Received artifacts differ from locally designed artifacts as catalyzing agents due to the differences between design and appropriation. While 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. The use of a received artifact depends upon how local users make sense of artifact features in terms of local priorities. The reception of high-stakes accountability policies presents an instructive case in point. Principal Williams 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, and not solely from the school administration. As the Adams Literacy Coach explained: "I think with the onset of (State test), it did something very interesting that almost forced us to work as a team." This shift stemmed from Williams' ability to reappropriate received artifact to bolster existing instructional initiatives while at the same time allowing her to establish an organizational rhetoric that the leadership team were on the same side as her staff – both groups could be united in a common effort to improve teaching and learning for students. The CSR grants allowed leaders at Franklin and Pearson to galvanize support to follow a common path – the design process helped leaders and staff recognize how their collective resources could help address a problem together. The professional community sparked by the reappropriation of received artifacts allowed staffs at all three schools to create the initial interactions, and satisfy

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 Five Week Assessment, 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 Five-Week Assessment built on and focused the insights of the Breakfast Club into a process that helped refine the scope of the Adams professional community into the ability to make instructional problems tractable.

Leaders use compounding artifacts to "telescope" into problems in order to address more specific 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 the key instructional problem in the school: 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 space to "using want 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 meet 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 instruction 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 (the teaching schedule and assessment binders) and received artifacts (formative assessments, redefining the responsibilities for Title 1 and Special Education positions) into a complex system of practice that focused their existing instructional expertise

Finally, compounding artifacts can be used to also redirect existing instructional capacity. Franklin's veteran teaching staff had wide experience in posing and solving a variety of instructional problems over the years. However, their problem solving

practices had led to staff separations according to professional specializations between classroom teachers and specialists. Principal Hoffman used the implementation of ISD as an opportunity to help teachers "bridge" their expertise into new, more collaborative, domains. Hoffman's redesign of professional development program helped the teaching staff work together and to integrate the lessons of differentiation into new practices of student learning. Principal 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 integrated service delivery.

Coherence artifacts

Finally, leaders use *coherence artifacts,* such as school improvement plans and annual budgets, to link disparate initiatives together for establishing and reinforcing a shared vision of instruction. Instructional program coherence (Newmann, 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." (297) Developing instructional program coherence requires leaders and teachers to commit 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 to symbolically demonstrate 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 integrated service delivery, Hoffman used the master schedule as a core artifact to match teachers and students together in effective instructional combinations.[1] The decision rules Hoffman used to construct the master schedule reflected her commitment to integrating the principles of ISD into the core instructional practices of the school. First, she focused on matching students with special needs (EEN, ESL and Speech and Language pathology students), teachers and specialists together in classrooms that reflected student needs, teacher abilities and existing professional relationships between teachers and specialists. She used additional decision rules, such as a 15:1 state-mandated student teacher ratio and a school-based rule to limit special needs population of any classroom to 30%, to emphasize the other sets of constraints at work in the school. Once constructed, the master schedule serves as a public enactment of how the Franklin priorities come together and play out in concrete, everyday practice.

[1] For a more detailed account of the Franklin scheduling process, see Halverson & Rah 2005 (http://dssl.wceruw.org/contents/4410_restructuring_classrooms_2.htm)

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, the traditional loosely-coupled structures of schooling are notorious for isolating instructional change efforts as discussions in the administrative realm that have little impact on classroom practice. The leaders in each of our schools recognized that school improvement planning was as important after changes in capacity had been developed as in setting an initial course of action. As coherence artifacts, school improvement plans help professional communities tie together the disparate artifacts at work into a school into a coherent instructional plan. Time allocated for central planning in rich systems of practice helps teachers decide on which initiative are worthy of continuing, which need to be reshaped, and which abandoned. The Adams' School Improvement Planning process, for example, provides a year-long process of agenda-setting, gathering data on effectiveness, review and new plan development that brings teachers together to reflect on what is worth supporting in the school. The 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 (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 in the SIP somehow, that 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 array of instructional programs while at the same time acting as a symbolic representation for what the school felt to be their working instructional vision.

Discussion

The leaders discussed here recognized the importance of collaborative action in creating systemic change in their schools. They did not, however, emphasize either 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." Their goals were to improve student learning, and their means were to use a variety of artifacts to improve their staff's capacity for change. This raises an interesting caution for leaders, following the counsel of consultants such as DuFour (2003), to make the development of professional community an intentional outcome for professional development. The lessons we can learn from Adams, Franklin and Pearson schools suggest that professional community is a valuable by-product of efforts designed to engage staff in resolving the chronic problems of teaching and learning. Their goals were to improve student learning, and their means were to use a variety of artifacts to improve their staff's capacity for change.

While 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 catalytic, compounding and coherence labels could be placed on any number of artifacts. For example, the needs of a school improvement plan could spark a staff to engage in new areas of collective learning, or the design of a literacy or math program could serve as an opportunity for leaders to draw together disparate threads of existing program design into a single coherent artifact. The labels refer, instead, to stages in how

leaders choose to use artifacts in their efforts to improve learning in schools. If successful systemic change in schools depends on tightened coupling of administrative and instructional practice, and if professional community is a key step in linking leadership and teaching, then leaders need to be able to sequence activities to help create the levels of professional community necessary to make problem-solving tractable. The point of considering artifacts as an occasion to study systemic change is the window they open on how leaders think and act in practice. Fetishizing artifacts as ends-in-themselves misses the point of the argument. The success of an artifact depends how it is used – tools in the hands of a master craftsman can simply be doorstops in the hands of a dolt.

Still, even if the point of studying how artifacts help leaders create professional community, we can learn from how leaders us artifacts to design better tools for subsequent use. In *Learning Policy* (2002), David Cohen and Heather Hill argue 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 discuss teacher responses to math reform in California, their conclusions as valuable for leaders and teachers engaged in systemic reform of other kinds. Understanding how good school leaders use artifacts to develop and marshal the capacity for systemic change could help on both ends of the policy spectrum: policy-makers could use this knowledge to build better tools for local use, and leaders and teachers interested in improving their practice could use this research to guide their own development efforts.

Conclusion

The paper draws on data from across the studies to illustrate how leaders use artifacts in concert to establish and maintain strong professional communities. While artifacts are necessary to legitimate organizational change activties, artifacts by themselves provide no guarantee that professional community will be either created or maintained. Rather than a stable achievement, the social capital resulting from professional community turns out to be a fragile capacity in need of continuous direction and maintenance. Leaders and teachers need to constantly struggle to maintain professional community by repurposing artifacts, shifting discussions to novel problems, and time-consuming trouble-shooting in order to avoid a relapse into the status-quo of loosely-coupled school organization. From a distributed leadership perspective, artifact use and design illustrate the interaction of the situational and social distribution of leadership by demonstrating why the need to for artifacts to structure social interaction is the flip side of the need for social interaction to bring structures to life. The argument concludes by proposing artifact design principles to guide school leaders in developing useful tools for building professional communities in their schools.

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