



Institute for Policy Research  
Northwestern University  
*Working Paper Series*

---

WP-05-02

**Professional Community or Communities?  
School Subject Matter and Elementary School Teachers' Work  
Environments**

**Page Hayton**

Graduate Student, Human Development and Social Policy  
Northwestern University

**James P. Spillane**

Faculty Fellow, Institute for Policy Research  
Professor of Human Development, Social Policy, and Learning Sciences  
Northwestern University

**DRAFT**

***Please do not quote or distribute without permission.***

## **Abstract**

This study examines elementary school teachers' professional communities, showing that teachers belong simultaneously to multiple professional communities, centered on different school subjects. Using data from four urban elementary schools, we describe differences between math- and literacy-based professional communities and identify possible explanations for these differences. We argue that professional communities centered on mathematics and literacy instruction differ in form and function, partly because teachers' conceptions of these subjects differ in terms of flexibility, enthusiasm, and moral purpose. Understanding the nature of subject-specific professional communities is vital, as professional community has been shown to be an important determinant of teachers' learning, practice, morale, and implementation of reform policies.

## Introduction

For a decade or more, researchers have pointed to the critical role of professional community in teachers' response to reform. Specifically, scholars argue that the nature and strength of a school's professional community is an important influence on teachers' efforts to reform their practice, and their sense of accountability for that practice.

While some researchers show how professional communities in high schools differ depending on the academic discipline, insufficient attention has been paid to the influence of school subjects on elementary school teachers' professional communities. Rather, work on teachers' professional communities at the elementary level has treated instruction as a generic practice, perhaps assuming that subject matter would not be a key influence on the professional community in the elementary school. We challenge that notion, arguing that while most elementary teachers are generalists teaching most subjects, their professional communities differ by school subject. Hence understanding the role of teachers' professional communities at the elementary level must take subject matter into account. The challenges of building and sustaining professional communities, as well as the levels and types of support professional communities offer teachers, are likely to differ by subject area in a given school.

Mathematics and literacy are the core subjects at the elementary level, consuming the bulk of the curriculum. The centrality of these two subjects is also reflected in the attention they receive from federal, state and local policymakers. In this paper we examine the structure and function of teachers' professional communities surrounding mathematics and literacy instruction in six elementary schools. After outlining our theoretical framework, we describe our methodologies in this theory-building study. We

then compare and contrast the math and literacy professional communities in the schools we studied. We find that, relative to math professional communities, literacy professional communities tend to be characterized by more frequent communication, more focus on pedagogical issues of learning and best practice, and arguably less vulnerability to fragmentation.

### Theoretical Background

#### *Professional community and its impact on school faculty*

An optimal professional community is an engaging and supportive interpersonal environment in which teachers collaborate (Seashore Louis, Kruse, & Bryk, 1995; McLaughlin & Talbert, 2001). Scholars measure professional community on dimensions that include:

- The extent to which teachers' classroom practice is deprivatized, that is, made available for peer observation and critique;
- The extent to which dialogue between colleagues occurs and is deeply reflective on their practice;
- The degree of focus on student learning;
- The amount of collaboration that goes beyond superficial support or assistance, to facilitate improvement of teaching practice at fundamental levels; and
- The degree to which norms and values are shared (Seashore Louis, Kruse, & Bryk, 1995).

In communities rating high on these dimensions, teachers engage in conversations that target deep rather than surface level aspects of their practice. They work together to

develop and refine collective norms of practice and values guiding day-to-day decisions. Having a say gives teachers a sense of efficacy, and in turn those norms and values serve to maintain consistency in instructional quality through guidance and accountability. A strong professional community is also marked by social trust, a confidence that colleagues are competent, concerned, reliable, honest, and open (Bryk & Schneider, 1996; Mishra, 1996; Lewicki & Bunker, 1996). By contrast, weak professional communities do not facilitate teachers' professional growth; "Without opportunities to acquire new knowledge, to reflect on practice, and to share successes and failures with colleagues, teachers are not likely to develop a sense of professional control and responsibility" (McLaughlin & Talbert, 1994, 130).

Support for teachers to innovate and improve their practice is more likely in schools where professional community is optimized (McLaughlin & Talbert, 1994). Furthermore, teachers in strong professional communities tend to feel more empowered and see their work as meaningful; to report more of an affiliation with the school; and to have higher job satisfaction than do teachers working in weak professional communities (Seashore Louis, Kruse, & Bryk, 1995). Working together, teachers can more effectively combat the challenges faced by schools and their communities, which may account for the positive correlation between student achievement and teachers' sense of professional community (Seashore Louis, Kruse, & Bryk, 1995). In addition, students can learn about the character of healthy interpersonal relationships when faculty members are engaged in "a cohesive, cooperative organizational climate" (Ingersoll, 2003, 194). From the field of education and the social network sub-domains of sociology and management, much research demonstrates the value of strong professional community.

Some scholars call for caution, however, arguing that the sort of collegiality associated with strong professional communities can have a downside. Collegiality, or cooperation and rapport among professionals, is typically considered a valuable trait of organizations. However, when the culture of teaching discourages close scrutiny of practice, “collegiality” is often limited to sharing complaints and stories, and this type of interaction does nothing to foster instructional improvement (Little, 1990). When strong ties between teachers serve to justify and defend mediocre practice, rather than challenge it, collegiality can stymie rather than enable instructional improvement. Collegiality affects, and is affected by, teachers’ tendency to keep their practice private (Little, 1990; Lortie, 1975). As outlined in our earlier discussion of a strong professional community, however, collegiality is only one dimension of a strong professional community.

A core dimension of teachers’ professional communities that can enable instructional improvement is the flow of knowledge about instruction among teachers. Specifically, whether professional communities become mechanisms for instructional innovation depends on whether they support the exchange and development of new knowledge about instruction. Individuals who connect two otherwise disconnected groups are one potentially powerful conduit for the transfer of new knowledge about instruction. These individuals fill “structural holes,” or occupy “cutpoints,” in a network, and they may possess power relative to their fellow teachers, because two or more groups depend on that individual for inter-group communication and negotiation (Burt, 1992). Cutpoints have the potential to facilitate communication within the network, cross-fertilizing different groups with new ideas. Looking at the issue at the collective level,

then, professional community may benefit from the presence of people who fill structural holes.

Of course, pursuit of power by individuals within a social network may harm the cohesiveness of the professional community. If individuals in cutpoint roles use their positions primarily for the manipulation of personal power, the presence of cutpoints could be detrimental to the group as a whole. Thus, structural holes may be either useful or dangerous in professional communities, by either enabling communication amongst disparate groups, or manipulating factions in pursuit of individual gain.

A cautionary stance is healthy with respect to professional community. Professional communities in schools are complex and dynamic; they can transition from stronger to weaker and vice versa; it may confer net benefit or net harm on the classroom practice of its members and ultimately on student learning. Whether the outcomes of a professional community are ultimately beneficial or detrimental, though, it is clear that teachers' interactions with each other are influential for their practice. Teachers' social networks are an important part of the context in which they grapple with and make sense of policy messages (Coburn, 2001). Through their social interactions, teachers can gain exposure to new ideas and expertise, have opportunities to clarify their own ideas, negotiate meanings with colleagues, and shape their understanding of and approach to reform policies (Spillane, Reiser, & Reimer, 2003; Spillane, 1999; Hargreaves, 2001; Ochs, Taylor, Rudolph, & Smith, 1992).

#### *School subject and professional community*

Prior research on professional community has tended to study a single *community* throughout the school. However, scholarship on teachers' differing perspectives and

practices in various subject areas suggests that a focus on professional *communities*, rather than community, may be warranted. Much of the research on teachers' approaches to different subject areas has looked at the high school level and has found that high school teachers differ in their conceptions of the subjects they teach. These differences have consequences for curricular practices, the ways teachers enact their roles, and the influence of external reform on practice (Grossman & Stodolksy, 1995; Siskin, 1990, 1991, 1994).

High school teachers' views of their subjects differ on dimensions such as the scope of the subject; the degree to which the material is sequenced; whether the subject is static or dynamic; and the degree to which the subject is core or peripheral (Grossman & Stodolsky, 1995). Mathematics teachers are more likely than teachers of other subjects to see their work as routine (Rowan, Raudenbush, & Cheong, 1993). In a study of 16 high schools involving over 500 teachers, Rowan (2001) found that a large amount of the variance in teachers' perceptions of task variability and task uncertainty was within schools rather than between schools. Teachers who subscribed to behaviorist theories about instruction (more often mathematics teachers) were more likely to view teaching as a routine task, while teachers who subscribed to constructivist theories of instruction (more often English teachers) were more likely to view teaching as a non-routine task, involving more task variety and task uncertainty. High school teachers' views of teaching and learning differ by school subject.

An important next step in the professional community literature is to address the multifaceted nature of *elementary* school teachers' work and explore whether it influences their professional communities. Elementary school teachers do not simply



“teach”; rather they teach spelling, reading, social studies, science, math, and so on. The assumption that teaching is a unitary practice is an oversimplification (Spillane & Burch, 2004). In fact, the available evidence suggests that subject matter is an important context for elementary school teachers’ work (Spillane & Burch, 2004; Stodolsky, 1988).

Elementary school teachers experience, identify with, and act on each subject matter in a unique way.

Compared with social studies, the topics, sequence of instruction, and intellectual goals of mathematics were more uniform across different 5<sup>th</sup> grade teachers’ classrooms (Stodolsky, 1988). Elementary teachers’ conceptions of themselves as teachers and as learners about teaching differ from language arts to mathematics, influencing how they construct and respond to their institutional environment (Drake, Spillane, Hufferd-Ackles, 2001; Spillane 2000) as well as the nature and intensity of learning opportunities they seek in those subject areas (Spillane, 2000). Research also indicates that both leadership arrangements and practices differ in formal meetings about elementary school reform initiatives in reading and in math (Burch & Spillane, 2003). Taken together this work suggests that the subject matter may be an important factor with respect to professional communities in elementary schools.

### Method

To explore elementary school teachers’ subject-specific professional communities, we conducted a mixed-method study, using data collected over several years, beginning in 1999, through the Distributed Leadership Study (DLS). Thirteen K-5 and K-8 schools in the greater Chicago area participated in the study, some for one year and others for up to five consecutive years. Schools were selected using a purposive

sampling strategy, such that they are demographically diverse and represent a range, from low to high, of innovation and academic improvement.

At six of the DLS school all teachers were asked to complete a network survey, which listed each member of the school's faculty and included questions about to whom the respondent goes for advice, for information about students, for friendship, and so on. It is this set of six schools that will be analyzed in this paper.

In addition to completing surveys, teachers from each school participated in an extensive ethnographic study. Researchers based at each school engaged teachers and administrators in semi-structured interviews and observed large numbers of meetings, informal conversations in hallways and lunchrooms, and practice in the classroom. These ethnographic researchers were present at each school multiple days per week for one to two academic years.

Five of the six schools (Bittman, Kosten, Baxter, Fieldman, and Kelly) are urban schools serving grades K-8. The sixth school, Wayne, is a K-5 school in a suburban district just outside the city limits. At both Wayne and Bittman, faculty members completed the social network questionnaire twice over the course of two years, whereas teachers at the other four schools did so once.

All six schools participated in the ethnographic study for at least two school years. The number of days ethnographers spent at the schools ranged from twenty-five, at Fieldman, to over one hundred, at Wayne. During their days at the schools, and more comprehensively afterward, the ethnographers drafted detailed field notes of their observations. In addition, interviews were conducted with school administrators and teachers. Each interview was taped and subsequently transcribed.

Each interview was read, and those pertinent to the topic of this paper were selected for qualitative analysis using the TAMS (Text Analysis Markup System) software program. Interviews that did not refer to, or include implications about, faculty members' professional communities or views of math or literacy, were deemed unrelated to this study and were not coded. The total number of interviews was 179, and these represented 101 respondents (see Table 1), ranging from kindergarten teachers to literacy specialists, and 8<sup>th</sup> grade science teachers to administrators.

Table 1  
*Interview data*

School	Baxter	Bittman	Fieldman	Kelly	Kosten	Wayne	Total
# of interviews	52	26	26	12	33	30	179
# of respondents	30	13	14	8	19	17	101

Our methodological approach involved mixed methods. For this paper we used both ethnographic data and the social network survey data in a mixed methods approach to analysis. First, using teachers' responses to the surveys and working with the UCINET software package (Borgatti, Everett, & Freeman, 2002) we constructed diagrams of each school's social networks of advice about reading instruction and of advice about math instruction. This technique provides a visual representation of the structure of the subject-specific professional community in each school and allows for quantitative analysis of its characteristics.

For each school's math and literacy advice networks, we obtained calculations of density, centrality, and cutpoints. A network's density is a measure of the proportion of

potential links between people that are actualized. In a network where every member has a tie to every other member, the density is 1.0; if half of the possible connections exist, the density is 0.5; and so on. A network's density indicates the extent of connection within the professional community.

Degree centrality is a measure of the number of ties an actor has. In an advice network, each actor's *indegree* centrality score indicates the number of people who approach that actor for advice, whereas the *outdegree* centrality score indicates the number of people to whom that actor goes for advice.

A cutpoint is an actor in the network whose removal would divide the network into smaller components. A network with a large percentage of cutpoints is vulnerable to splitting into factions, thus blocking communication throughout the network, if any of those cutpoints exits the network.

To animate the static picture of professional community drawn by these quantitative variables, we conducted qualitative analysis of interviews and read through all field notes. After reading through the interviews, we selected for coding those that pertained to the issues of concern in this paper.

After an initial reading of one school's interviews, and based on the literature reviewed above, we devised a coding scheme to highlight teachers' comments about math and literacy instruction and their interactions around those topics. Reading through the other three schools' interviews, we coded for references to the subject-specific professional communities within the school. Coding categories included teachers' depictions of the math- and reading-specific communication that took place, both within their grade-level or subject team, and across such teams; when teachers indicated that

their social support and interactions were ideal or problematic; whether they considered their professional community vulnerable to breakdown; administrative involvement; and why the respondent chooses certain individuals to seek out for advice related to math or reading instruction.

To understand some of the dynamics underlying differences in professional community by subject area, we coded for teachers' perceptions of math and literacy themselves. We looked for expressions of enthusiasm about teaching or practicing the subject matter, such as statements about enjoying or loving a subject, or excitement about student engagement with the subject. We also sought indications of the value accorded to the subject area, as well as mentions of the subjects' applicability to other school subjects and to life outside or after school. In addition we coded depictions of each subject as constrained or flexible. In the constrained category we looked for indications that the teacher felt limited in his or her choices for what or how to teach, that instruction was prescribed by a certain curricular program, and that the teacher perceived limits to his or her professional discretion. On the other hand, comments about freedom and opportunities for professional discretion and creativity in designing instructional approaches were coded as flexible.

As we continued analyzing interviews from the remaining schools, we modified the coding scheme to adapt to the themes that seemed most salient. While open to emergent themes, we used the coding scheme describe above to analyze the data. From this analysis we filled out our picture of different subject-specific professional communities and began to craft assertions about the reasons underlying these differences.

### The Form and Function of Teachers' Subject-Specific Professional Communities

One issue with respect to professional communities concerns relations between formal structures and the agency of individuals. We work from the assumption that individual agency and organizational structure mutually influence each other (Giddens, 1979; Barley, 1986). As Barley argues, “the institutional realm and the realm of action configure each other” (1986, 80). Hence the professional community within a school results from the interactions between individuals’ agentic decisions and the ways the formal organizational structure constrains and enables relations. Research suggests that professional community can develop through both top-down and grassroots efforts, as teachers navigate through the formal organizational structure to build their informal social networks (Raywid, 1995; King & Weiss, 1995; Rollow & Bryk, 1995; Lonquist & King, 1995; Weiss, Seashore Louis, & Hopkins, 1995).

Considering a school’s professional community as “an emergent property of ongoing action” (Barley, 1986, 79) taken by its faculty members, within organizational bounds, we can analyze that community (or, more realistically, communities) in terms of both form and function. By form we mean what many sociologists term structure, “the enduring, orderly, and patterned relationships between elements of a society” (Abercrombie, Hill, & Turner, 1995). In this case the society is an individual school, and the elements are its faculty members. The form, or structure, of a professional community is the basis on which individuals interact. Building on that form, a community’s function is the set of purposes to which the form is put. Thus by function we refer to the types of communication teachers engage in within the structure of their professional communities.

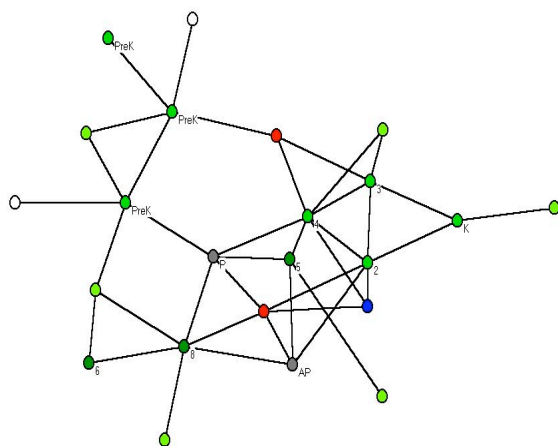
We will describe below several ways in which math and literacy professional communities differ in both form and function within our six elementary schools.

### *Form*

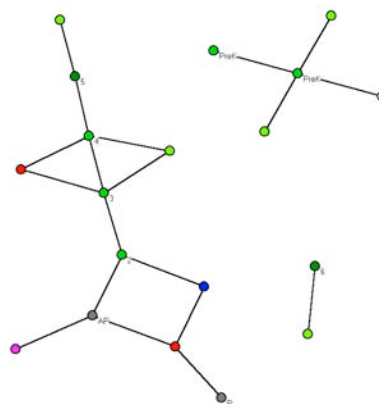
Pictures can speak a thousand words; consider the map of subject-specific networks at Kelly School. These two maps capture substantial differences between the math and reading advice networks at Kelly School (See Figure 1).

Figure 1

*Kelly reading network*



*Kelly math network*



An initial glance at these maps reveals that the literacy network is denser, in that teachers and school leaders have ties to more people, and more of the community's potential ties are actualized, compared with mathematics. In the literacy advice network, there appears to be more frequent communication among more members of school staff than in the mathematics advice network. Within the math network, a given individual is likely to have fewer ties than within the literacy network. Furthermore the math network

is more segmented, whereas the literacy network is unified. Similar patterns hold across all six schools, which ranged in staff size from 29 (Kelly) to 81 (Kosten).

At all six schools, teachers' literacy-specific advice networks were denser than their math-specific advice networks (see Table 2). In most cases the literacy network was about one third denser than the math network, and at Kelly the literacy network is more than four times as dense as the math network. For teachers at these schools, this means they are communicating with a higher proportion of their colleagues about literacy instruction than about mathematics instruction.

Table 2  
*Subject specific network density*

School	Literacy network density	Math network density	% Increase from math to literacy <sup>1</sup>
Baxter	.0163	.0145	12%
Bittman, year 1	.0382	.0293	30%
Bittman, year 2	.05	.0365	37%
Fieldman	.0453	.0217	109%
Kosten	.0096	.0075	28%
Kelly	.1944	.045	332%
Wayne, year 1	.0312	.0234	33%
Wayne, year 2	.0435	.029	50%

In their interviews, approximately 40% of this study's respondents describe more frequent communication around literacy instruction than around mathematics instruction. Another 15% depict the frequency of communication in the two subjects as approximately equal. No teacher in this study indicated more communication around math than around literacy.

---

<sup>1</sup> There is no gold standard among social network methodologists as to what might count as a significant difference between networks on density and other measures (Wasserman & Faust, 1999). Here and elsewhere in this paper, we followed the lead of Fischer & Yoss (1995), using the percentage difference as a yardstick to measure the difference between networks.



To illustrate, several teachers at Wayne explicitly contrasted their conversations about literacy and math instruction, indicating that their conversations about math instruction were more rare. A 2<sup>nd</sup> grade teacher distinguished reading instruction, about which her team “talks[s] about everything,” from math instruction, about which she said, “I don’t really go to anyone else to help me strategize or plan for my math.”

Similarly, a Wayne 1<sup>st</sup> grade teacher stated that “collaboration of the other teachers” is very important to her efforts to improve her literacy instruction. On the other hand, she said, “I don’t think anybody talks about math... my team over the last couple years has been so concerned with reading that we don’t really talk about math too much... With reading we’re sharing books and we’re sharing ideas... [with] math we’re not... Nobody talks about math.” Teachers at the 1<sup>st</sup> and 2<sup>nd</sup> grade levels, in particular, had been engrossed in the reform efforts in literacy over the last two years. Thrusting their energy into reading instruction, they engaged in cooperative conversations in that area, to the exclusion of any dialogue about math.

Likewise, teachers in a range of positions<sup>2</sup> at Kosten referred to the reading team collaborating, whereas that was presented as an ideal, rather than the reality, for the math team. One math teacher told another on the math team, “We really need to get everyone [math team] together. The language arts teachers did that this summer, got everyone together and set a curriculum, so they were together.... We need to get together.” Additionally, a 5<sup>th</sup> grade reading teacher stated that, “We [the literacy team] do a long term range plan. What we’re going to teach from day one on. We’re always talking – I have a great team. We’re always talking to each other, the reading teachers at least, as to

---

<sup>2</sup> Throughout this paper, we will designate official subject specialists by including their specialty in their title. Teachers who are grade-level generalists will be referred to as simply “teacher” or, for example, “fourth grade teacher.”

where – ‘OK, where are you,’ for example, ‘what section are you doing right now and how are you doing it?’” These comments from both math and reading specialists indicate that teachers engage more frequently in discussion about literacy instruction than about math instruction, and that this discussion tends to result in cohesion, support, and the exchange of ideas.

Communication about literacy was both initiated by teachers in informal dialogue, and facilitated by the formal organization and official opportunities presented by the school. Official staff development time was dedicated predominantly to language arts presentations, whereas very little attention was devoted to math in these formal sessions. Kelly’s assistant principal reported that “Most of the teachers, when they get up and make presentations [at staff in-service days], it’s a reading... or writing... it’s usually in the language arts area.” Several Bittman teachers commented on the lack of professional development offered in math, particularly in comparison to the abundance offered in reading within the school. One teacher complained, “The Board has in place the programs for reading staff development, and they haven’t quite gotten there in math yet.” Both Bittman’s principal and a 7<sup>th</sup> grade teacher, who with 11 other Bittman teachers had recently completed her reading endorsement, independently indicated that professional development for reading instruction is offered to the entire faculty, whereas math professional development takes place mainly during meetings for math specialists. Furthermore, there are fewer math specialists across the board than there are reading specialists. One Bittman teacher stated that, in order to meet the school’s math goals, teachers would need more daily collaboration in addition to formal staff in-servicing. At each of these six schools, teachers discuss literacy instruction with their colleagues more

often than they do math instruction. As expected in a denser network, teamwork seems to be stronger surrounding literacy instruction.

Another indicator of communication amongst network members is indegree centrality, which refers to the extent to which individuals are identified by their peers as a source of advice. In a network with higher overall indegree centrality scores, participants are, on average, sought out for communication by larger numbers of peers. In all six schools the mean indegree centrality score is higher in the literacy network than in the math network (see Table 3). The percentage difference between the mean scores in math and reading confirms that teachers communicate with more colleagues around literacy instruction than around math instruction.

Table 3  
*Subject-specific network indegree centrality*

School	Mean indegree centrality: Literacy	Mean indegree centrality: Math	% Increase from math to literacy
Baxter	0.726	0.473	53%
Bittman, year 1	1.38	0.88	57%
Bittman, year 2	1.33	0.88	51%
Fieldman	0.950	0.597	59%
Kosten	0.86	0.67	28%
Kelly	1.00	0.20	400%
Wayne, year 1	2.06	1.192	73%
Wayne, year 2	2.393	1.425	68%

Analyzing which actors have the highest indegree centrality suggests some interesting patterns across the schools. In reading networks, formally designated reading specialists and primary grade (K-2) teachers dominated the indegree centrality rankings. In math networks, formally designated subject specialists' prominence dropped, due in some part to the lower number of math specialists, compared with reading specialists, in

each school. Intermediate grade teachers (3-5) showed up more often in the math centrality rankings. This may indicate that teachers see literacy expertise concentrated more in early grade teachers and reading specialists, and math expertise in teachers of later grades. However, it is important to keep in mind that overall indegree centrality scores were higher in reading networks than in math networks, indicating that teachers communicate with more colleagues about literacy instruction.

In sum, math professional communities tend to take a distinctly different form than do literacy professional communities, even within the same school faculty. Communities centered on advice about literacy instruction are denser, and individuals within them have more ties, leading to larger amounts of communication. In what ways that communication tends to differ between subject-specific professional communities is the subject of the following section.

### *Function*

At the six schools, the content of teachers' communication differed between math and literacy communities. In both subject areas, teachers had conversations about practical matters of immediate concern, such as the textbook and materials, lesson plans, and time shortages. Discussions about math were typically limited to these topics. By contrast, when talking about literacy instruction, teachers tended to expand their scope to more fundamental issues of teaching and learning. No teachers reported that their dialogue regarding math instruction focused on how best to facilitate learning. But, of all the teachers whose interviews were analyzed at the six schools, more than a third indicate

that discussions around literacy instruction were more likely to cover how to facilitate learning.

At Kosten literacy was discussed formally in staff meetings, as well as informally in the faculty lunchroom; teachers talked about scheduling and its impact on reading instruction, curriculum, the crucial nature of reading to other school subjects, and how to encourage a love of reading in students. Each of these reading-related issues arose in both informal settings and formal settings, including staff meetings. On the other hand, faculty members rarely discussed math instruction, officially or casually. When teachers did talk about math, field notes indicate the conversation centered on the textbook. For instance, teachers informally chatted about how well they liked the book and which lessons from the book's sequence they had covered with their classes. Formally, the administration called teachers together to choose among a few options for a new math textbook. Aside from that occasion, there was no evidence of teachers discussing math in formal meetings.

Conversations around math tended to be brief and more immediately practical; teachers discussed materials and the sequencing of content covered in the curriculum. For example, in her interview a 5<sup>th</sup>-7<sup>th</sup> grade gifted program teacher at Kosten was asked whether her grade-level teammates spent a lot of time talking about their pedagogical approaches in math. She replied, "Oh gosh, no. There wasn't time. We just stood and said, 'Here's what I'm gonna do, this, this, and this, and I'm gonna get this, this, and this done.'"

Similarly, when asked whether teachers had talked about their concerns about the required curriculum, a 2<sup>nd</sup> grade bilingual teacher replied in the negative. The interviewer

followed up, “Do you foresee your group getting together and talking about those things?” The teacher responded, “Not unless I pull their teeth out.”

Several other Kosten teachers described the types of dialogues they tend to have with their colleagues around math. A 5<sup>th</sup>-8<sup>th</sup> grade math teacher said an example of this dialogue would be, “ ‘How is your 7<sup>th</sup> grade class skill-wise?’ ... There’ll be a fast exchange on things like that. We’re not on the exact same schedule – in fact he’s using a different book right now ‘cause we’re short, but every once in a while we just touch base.” In a later interview this same teacher stated, “We don’t do it a whole lot, but on occasion Frank, the 8<sup>th</sup> grade teacher, and I will talk to each other – in fact he just gave me my Trivial Pursuit cards... It’s a matter of no time, but when you run into each other, you’ll say a few things to each other. But otherwise [there is] really not someone I routinely work with on math.” Communication about math seemed to be brief, infrequent, and more focused on touching base with each other than about sharing ideas or developing instructional approaches.

One Wayne teacher stated that her teammates’ conversations about math tended to ask, “What lesson are you on?” or “Do your kids understand X or struggle with Y?” This brief reference to student understanding of the material is rare, and, as described above, most teachers at Wayne described virtually no analysis of math teaching or learning taking place.

By contrast, in conversations about literacy instruction, teachers described more discussion about teaching philosophy and instructional approaches. For example, a 5<sup>th</sup>-6<sup>th</sup> grade writing teacher at Kosten said of her colleagues in the language arts team, “They have different theories, and I do believe in different theories. I try to use some of their

ideas.” Another member of the literacy and language arts team said, “We talk about content issues and teaching approaches. ‘If you’ve read this novel before with a class, did they understand it? Do you think, you know, do you think this will be appropriate? Or how can I go about making sure the kids know what a verb is or how to use commas?’... They have little techniques that I find helpful.” These teachers shared ideas, compared theories, and discussed student understanding.

Following an in-service day, teachers on the Kosten literacy team described the sharing and communication they had appreciated during their in-service meeting. The principal stated that the team will continue to talk about curriculum “and hopefully teaching and learning.”

In dialogue about literacy instruction, teachers emphasized that both students and the teachers, themselves, were and should be learning. A Kosten reading teacher at the 5<sup>th</sup> grade level stated, “I’m new, so I’m going to them [more experienced teachers] and saying, ‘Give me an example of one student’s work that you think is great so I can learn from that. So what are you doing now? Give me an example of this. Show me this. Show me that.’” This teacher was looking to learn from her colleagues, particularly about lesson plans and assessing student work.

At the time of the interviews, the 1<sup>st</sup> and 2<sup>nd</sup> grade teachers at Wayne were immersed in a reading reform project, in collaboration with a local university. One of these teachers described this project as “really pulling apart what we do and putting a purpose to it... like I was in college again.” In contrast she said her team doesn’t analyze teaching or learning in their math lessons. Teachers were learning, as they discussed student learning and pedagogy in their literacy-related professional communities, whereas

the math-based professional communities focused more on lesson sequencing and curricular materials.

Across the schools in this study we see that discussions about math instruction tended to be of a more practical nature. It was primarily in literacy professional communities that teachers engaged in any dialogue about fundamental pedagogical issues. In this way the function, as well as the form, of these subject-specific professional communities were notably distinct.

### Conclusion

Teachers communicate more frequently, and with more colleagues, about literacy instruction than about math instruction, as demonstrated by network densities, indegree centrality score averages, observations of meetings and casual conversations, and teachers' own reports. Discussions in each professional community center on different topics, and different types of teachers tend to be sought out for advice in each subject area. These structural and functional differences between teachers' professional communities around math and literacy point to the relative strength of literacy professional communities in these six schools. Given the importance of professional community, it is necessary to understand why differences in subject-specific communities exist. Proposing assertions to explain these differences will be the next step in our research agenda.



## References

Abercrombie, N., Hill, S., & Turner, B.S. (1995). *The penguin dictionary of sociology*.

Accessed online August 30, 2004, at [www.xreferplus.com](http://www.xreferplus.com).

Barley, S.R. (1986). Technology as an occasion for structuring: Evidence from observations of CT scanners and the social order of radiology departments. *Administrative science quarterly*, 31: 78-108.

Borgatti, S.P., Everett, M.G. and Freeman, L.C. (2002). *UCINET for Windows: Software for Social Network Analysis*. Harvard: Analytic Technologies.

Bryk, A.S. & Schneider, B. (1996). *Social trust: A moral resource for school improvement*. U.S. Department of Education Office of Educational Research and Improvement.

Burch, P. & Spillane, J.P. (2003). Elementary school leadership and subject matter: reforming mathematics and literacy instruction. *The Elementary School Journal*, 103(5).

Burt, R.S. (1992). The social structure of competition. In N. Nohria & R.G. Eccles (Eds.), *Networks and organizations: Structure, form, and action* (pp. 57-91). Boston: Harvard Business School Press.

- Coburn, C.E. (2001). Collecting sensemaking about reading. *Educational evaluation and policy analysis*, 23(2): 145-170.
- Dewey, J. (1909). *Ethical principles underlying education*. Chicago: The University of Chicago Press.
- Drake, C., Spillane, J.P., & Hufferd-Ackles, K. (2001). Storied identities: Teacher learning and subject-matter context. *Journal of curriculum studies*, 33(1): 1-23.
- Fischer, C.S. & Yoss, S. (1995). National differences in network density: Israel and the United States. *Social networks*, 17(2): 129-145.
- Giddens, A. (1979). *Central Problems in Social Theory: Action, Structure, and Contradiction in Social Analysis*. Berkeley: University of California Press.
- Grossman, P., & Stodolsky, S. (1994). Considerations of content and the circumstances of secondary school teaching. *Review of research in education*.
- Grossman, P.L. & Stodolsky, S.S. (1995). Content as context: The role of school subjects in secondary school teaching. *Educational researcher*, 24(8): 5-11, 23.
- Hargreaves, A., Earl, L., Moore, S., & Manning, S. (2001). *Learning to change: Teaching beyond subjects and standards*. San Francisco: Jossey-Bass.

- Ingersoll, R.M. (2003). *Who controls teachers' work? Power and accountability in America's schools*. Cambridge, MA: Harvard University Press.
- Jackson, P.W. (1998). John Dewey's *School and Society* revisited. *The elementary school journal*, 98(5): 415-426.
- King, J.A. & Weiss, D.A. (1995). Thomas Paine High School: Professional community in an unlikely setting. In K. Seashore Louis & S.D. Kruse (Eds.), *Professionalism and community: Perspectives on reforming urban schools* (pp. 76-104). Thousand Oaks, CA: Corwin Press.
- Lewicki, R.J. & Bunker, B.B. (1996). Developing and maintaining trust in work relationships. In R.M. Kramer & T.R. Taylor (Eds.), *Trust in organizations: Frontiers of theory and research* (pp. 114-139). Thousand Oaks, CA: Sage.
- Little, J.W. (1990). The persistence of privacy: Autonomy and initiative in teachers' professional relations. *Teachers college record*, 91(4): 509-537.
- Lonnquist, M.P. & King, J.A. (1995). Changing the tire on a moving bus: Barriers to professional community at Whitehead School. In K. Seashore Louis & S.D. Kruse (Eds.), *Professionalism and community: Perspectives on reforming urban schools* (pp. 133-159). Thousand Oaks, CA: Corwin Press.

- Lortie, D.C. (1975). *Schoolteacher*. Chicago: University of Chicago Press.
- McLaughlin, M.W. & Talbert, J.E. (2001). *Professional communities and the work of high school teaching*. Chicago: University of Chicago Press.
- Mishra, A.K. (1996). Organizational responses to crisis: The centrality of trust. In R.M. Kramer & T.R. Taylor (Eds.), *Trust in organizations: Frontiers of theory and research* (pp. 261-287). Thousand Oaks, CA: Sage.
- Myers, D.G. & Diener, E. (1995). Who is happy? *Psychological science, 10(1)*: 10-19.
- Ochs, E., Taylor, C., Rudolph, D., & Smith, R. (1992). Storytelling as a theory-building activity. *Discourse processes, 15*: 37-72.
- Patrick, B.C., Hisley, J., Kempler, T., & College, G. (2000). ‘What’s everybody so excited about?’: The effects of teacher enthusiasm on student intrinsic motivation and vitality. *Journal of experimental education, 68(3)*: 217-236.
- Raywid, M.A. (1995). Professional community and its yield at Metro Academy. In K. Seashore Louis & S.D. Kruse (Eds.), *Professionalism and community: Perspectives on reforming urban schools* (pp. 45-75). Thousand Oaks, CA: Corwin Press.

- Rollow, S. & Bryk, A.S. (1995). Catalyzing a professional community in a school reform left behind. In K. Seashore Louis & S.D. Kruse (Eds.), *Professionalism and community: Perspectives on reforming urban schools* (pp. 105-132). Thousand Oaks, CA: Corwin Press.
- Rowan, B. (2001). Teachers' work and instructional management, part 1: Alternative views of the task of teaching. Unpublished.
- Rowan, B., Raudenbush, S.W., & Cheong, Y.F. (1993). *Contextual effects on the self-efficacy of high school teachers*. Stanford, CA: Center for Research on the Context of Secondary Teaching, School of Education. Report to US Department of Education.
- Scott, J. (2000). *Social network analysis: A handbook*. London: Sage Publications.
- Seashore Louis, K. & Kruse, S.D. (1995). *Professionalism and community: Perspectives on reforming urban schools*. Thousand Oaks, CA: Corwin Press, Inc.
- Seashore, Louis, K., Kruse, S.D., & Bryk, A.S. (1995). Professionalism and community: What is it and why is it important to urban schools? In K. Seashore Louis & S.D. Kruse (Eds.), *Professionalism and community: Perspectives on reforming urban schools*. Thousand Oaks, CA: Corwin Press, Inc.

- Siskin, L.S. (1990). *Different worlds: The department as context for high school teachers*. Stanford, CA: Center for Research on the Context of Secondary Teaching, School of Education. Report to US Department of Education.
- Siskin, L.S. (1991). *School restructuring and subject subcultures*. Stanford, CA: Center for Research on the Context of Secondary Teaching, School of Education. Report to US Department of Education.
- Siskin, L.S. (1994). *Realms of knowledge: Academic departments in secondary schools*. Washington DC: Falmer Press.
- Spillane, J.P. (1999). External reform initiatives and teachers' efforts to reconstruct their practice: The mediating role of teachers' zones of enactment. *Journal of curriculum studies*, 31(2): 143-175.
- Spillane, J.P. (2000). A 5<sup>th</sup> grade teacher's reconstruction of mathematics and literacy teaching: Exploring interactions among identity, learning, and subject matter. *Elementary school journal*, 100(4): 307.
- Spillane, J.P. & Burch, P. (2004). The institutional environment and instructional practice in K-12 schools: "Loose coupling" revisited. In B. Rowan (Ed.), *New institutionalism in education*.

Spillane, J.P., Reiser, B.J., & Reimer, T. (2003). Policy implementation and cognition: Reframing and refocusing implementation research. *Review of educational research quarterly*, 72(3).

Stodolsky, S.S. (1988). *The subject matters: Classroom activity in math and social studies*. Chicago: University of Chicago Press.

Stodolsky, S.S. (1989). Is teaching really by the books? *National society for the study of education yearbook*, 88: 159-84.

Stodolsky, S.S. & Grossman, P.L. (1995). The impact of subject matter on curricular activity: An analysis of five academic subjects. *American Educational Research Journal*, 32(2).

Talbert, J.E. & McLaughlin, M.W. (1994). Teacher professionalism in local school contexts. *American journal of education*, 102(2): 123-153.

Talbert, J.E., McLaughlin, M.W., & Rowan, B. (1993). Understanding context effects on secondary school teaching. *Teachers college record*, 95(1): 45-70.

*Text analysis markup software (TAMS) analyzer*. (2002).

<http://tamsys.sourceforge.net/osxtams/>

Wasserman, S. & Faust, K. (1999). *Social network analysis: Methods and applications*.  
Cambridge: Cambridge University Press.

Weiss, D.A., Seashore Louis, K., & Hopkins, J. (1995). Dewey Middle School: Getting  
past the first stages of restructuring. In K. Seashore Louis & S.D. Kruse (Eds.),  
*Professionalism and community: Perspectives on reforming urban schools* (pp.  
160-184). Thousand Oaks, CA: Corwin Press.