

Chapter 2:

Social Capital: An Untapped Resource for Educational Improvement

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A century ago, the State Supervisor of Rural Schools in West Virginia, L. Hanifan, described how a new school district supervisor worked closely with his teachers to really understand the 457 families in his 33-square mile district. Efforts included having the teachers meet with parents, and survey them regarding their needs. In addition to using the schools as a focal point for community gatherings, the teachers were encouraged to develop a deeper understanding of the history of their schools and communities. The schools became a means to improve not just the lives of the children attending them, but also the broader community, as the teachers led evening classes for parents wanting to develop an education, and even brought in speakers to help improve farming yields. Student attendance improved dramatically year on year, and the communities where the schools were located benefited on a number of fronts. Hanifan coined the term “social capital” to describe the goodwill and social benefits that derived from these efforts.ⁱ

Fast-forward 100 years: Despite extensive evidence in the intervening period that social capital is a core component of school success, schools are often defined by simplistic outcome measures rather than the fundamental structures for learning, and individual and community growth. Yet instruction is premised on the primacy of knowledge exchange, a shared vision on the goals and benefits of learning, and trust and respect. These are at the heart of what makes social capital such a critical component of school improvement efforts. In this chapter we will provide an overview of social capital, and our research highlighting its benefits for enhancing student performance. As with all research on schools, knowing what matters, and doing something about it, are two very different things. So we also provide direction for policy change to facilitate and encourage the shift towards a school performance model predicated on the value of social capital.

The Three Pillars of Social Capital

As our opening suggests, the importance of social ties to the success of the educational process has long been recognized. But the act of teaching has historically been a very individual and independent undertaking.ⁱⁱ These norms are breaking down, however, and over the last two decades, schools are increasingly viewed as communities of professionals working together to generate, combine, and transmit knowledge.ⁱⁱⁱ Nevertheless, teachers tend to share only a limited amount of task-specific information and draw upon a very small number of close ties for advice about teaching.^{iv} Explanations for the relatively low levels of instructionally-oriented exchange include the unflattering conclusion that the best teachers want to maintain their status in an environment that offers little in the way of recognition and enhanced extrinsic rewards, as well as the proposition that less-able teachers may be unwilling to risk exposing their deficiencies and thus not engage in collaborative learning. Beginning in the late 1990's, however, there has been an increasing emphasis in the academic literature on the value of high-quality interactions among teachers.^v

In our own work, we emphasize the importance of the social dimensions of work as a critical factor to organizational performance in a number of contexts, ranging from auto plants to nursing homes.^{vi} In schools in particular, we undertook extensive large-scale studies of the social relations in urban public schools.^{vii} We collected data from teachers, principals, students, and parents. We asked the teachers about their relations with others teachers, as well as the leaders of their schools; we asked the parents about their views on the instructional practice in the school; we obtained student achievement scores over time; and we had principals keep track of their activities. In our initial research in 88 schools, we worked with teachers to operationalize a survey instrument that could assess three key dimensions of social capital: structural, relational, and cognitive.^{viii}

The structural dimension focuses on the content-related exchanges that occur between teachers, specifically communication that is substantive and focused on instruction. This is often assessed by the number of interactions between pairs of teachers, as well as the percentage of all pairs of teachers within a group that could potentially be communicating with one another about instruction (e.g. the fraction of all potential pairs of teachers in a grade-level team who engage in such exchange). This interaction helps teachers understand how knowledge in use differs from

formal practice. As teachers engage in reflective dialogue, and relate critical incidents and anecdotes, they enhance individual as well as collective efforts.

Complementing the structural dimension of social capital is the relational dimension. It evolves from the repeated interactions among teachers, and is most prominently manifested as trust. When teachers trust one another, the structural component of social capital is characterized by richer exchanges. When teachers trust one another, they are also more likely to allow themselves to be vulnerable – ask questions if they want to extend their learning, or be willing to admit when they do not know something and need help. This provides clear benefits to the school and its students, as well as to the individual teacher.

Finally, as teachers engage in rich dialogue and exchange, we see the emergence of the cognitive dimension of social capital. Teachers develop a shared understanding of the goals they wish to attain, and a shared vision of what it means to be effective. This reduces the likelihood that any given teacher will feel like an “outsider” and self-interested behavior will be less prevalent as teachers become more willing to subordinate personal goals to those of the collective. Teachers feel a sense of responsibility towards one another, the agendas they have set, and efforts to facilitate and embrace collective action.

Not surprisingly, having rich communication, high trust, and a shared vision of what the collective’s goals and actions should be, leads to better outcomes. In our initial study in schools, we found that when teachers reported high levels of social capital in their schools, student performance on both reading and mathematics improved dramatically. Particularly for math, improvements in performance were mediated by enhanced instructional practice. In a later study we built on our initial research and followed over 1000 teachers in 239 grade teams.^{ix} We were able to link teacher reports on their social exchanges, centered specifically on math instruction, to the growth in math achievement scores of their 24,187 individual students. We found that when social capital was high in a grade-level team, student performance improved significantly. Indeed, a one standard deviation increase in team social capital improved the average performance of individual students of those teachers by an average of 5.7%. To put that improvement in perspective, student eligibility for free lunch for this same sample was associated with an average reduction of 7.3% in student achievement growth. These results

confirm those of our earlier research in showing social capital to be a powerful tool for improving student learning.

Social Capital in Relation to Human Capital

One of the earliest researchers on social exchanges and their effect on educational outcomes, James Coleman, argued that social capital should be considered a form of capital like any other: “Just as physical capital is created by making changes in materials so as to form tools that facilitate production, human capital is created by changing persons so as to give them skills and capabilities that make them able to act in new ways. Social capital, in turn, is created when the relations among persons change in ways that facilitate action”.^x In our research we show that social capital has important implications in its own right, but also interacts in meaningful ways with other forms of capital. Looking specifically at human capital, we examined the relationship between social capital in the school, teacher human capital, and student achievement.

Here we found that teacher skill bears a nuanced relationship to social capital. The ties between teachers can take different forms. Teachers can be embedded in communities where people talk frequently, regardless of the depth of those conversations. Conversely, they can have deep conversations – the kind that you might have with a colleague you trust and respect – but only with a limited number of people. In the analyses we noted earlier examining the 1000+ teachers, we took a close look at the relationship between human and social capital. What we found was that more-able teachers (those with the strongest human capital) benefitted from strong ties with other teachers. But for less-able teachers, the benefits came from dense ties, i.e., being immersed in a team of teachers who communicate frequently on instructional content and where there is widespread participation in such conversations. Thus, the teachers with higher levels of human capital benefitted most from strong ties. Teachers lower in human capital benefitted most from dense ties. For these teachers, what mattered most was that conversations about instruction occur frequently and include a large number of other teachers on the team.

By linking social capital to human capital, we can also begin to understand why an individual teacher would contribute to social capital. As has been observed by many, the contributions that enrich the community of teachers can come at a cost to the individual.^{xi} Sharing information takes time and effort, and some degree of free-riding would be expected. When brought to its logical extreme, such free riding ultimately risks killing the collaboration

and exchange that defines the very essence of social capital. While social capital does require effort, part of what we observe in our research is that this effort centers on redirecting the nature of exchange and conversation that often already take place. In particular, we observe that effective social capital in schools is not so much about having more conversations with peers. Rather, it is about shifting the focus of conversation to be more instructionally-focused (e.g. questions about math concepts or effective ways to reach an individual student) rather than general talk about district policies or the state of the world. With a focus on content, teachers learn from their colleagues, develop new insights on how to teach, benefit from the camaraderie and social support that comes with shared vision and trust, but also, as we have just discussed, substantively change their practice in a way that generates tangible improvements in students' outcomes.

One important conclusion is that understanding the training teachers are receiving and how it can enhance the collective provides a useful pathway to enhancing the quality of the discourse that takes place in the school. We suspect that the historical push for continuing education is due to the economics orientation of many policy makers, who treat human capital as a resource that belongs to the organization. However, taking a more psychological perspective, aggregating individual knowledge does not explain how the collectivity of knowledge facilitates performance. Linking human capital to social capital is an important step in this direction, and is a way for policy makers to expand the thinking beyond dated requirements that teachers sit through a given number of professional-development hours each year. In particular, professional development can provide an important pathway to developing shared vision, as well as what psychologists call "transactive memory".^{xii} The latter is important as it provides insight regarding who, from among the set of teachers that received the training, can provide help *ex-post* on particular facets of the training that a teacher may later need help with implementing. In the same vein, stability in teacher assignments in particular schools, along with professional development that is specific to the subject matter, may be better investments by school districts than general requirements for professional development hours.

The Importance of External Ties

We have highlighted the benefits of social capital for both teachers and students. There are, however, instances where it can have significant drawbacks. Crime syndicates, for example,

work directly against societal interests, yet may display rich information flows, high trust, shared vision, and the collective identity associated with social capital. Studying the case of Colombian drug cartels, Rubio (1997) terms this “perverse social capital.”^{xiii} But all forms of perverse social capital need not be based on nefarious interests. Indeed, teachers could trust one another, engage in extensive interaction, and have a shared vision and identity, but that shared vision may be one that is, at best, indifferent to student learning.

One characteristic of perverse social capital is that it tends to emerge in communities that are isolated. We have focused so far on the social capital that is developed within the school context – academics often refer to this as “bonding” social capital. While the commonality in purpose and sense of identity that such capital generates can be a source of great benefit, it also poses risks when group perspectives are too insular or parochial. The associated loyalties and bonds run the risk of becoming so strong that they crowd out external ideas and insight, and the exploration of perspectives from outside of the group. While sociologists will point to social divides as important drivers of such insularity (e.g. ethnicity or religion), the risk to such insularity has been documented in a broad range of contexts. It is especially prominent in the area of innovation. Insular design teams and firms, for example, can develop communication mechanisms and shared perspectives that lead to very successful refinement and fine-tuning of existing products and processes. But if they only talk to each other they often lack the ability to embrace fundamentally new and important ideas that can transform the market they depend upon.

The solution is to embrace some “bridging” ties. These connections to outside others can provide a useful sounding board for ideas, as well as a source of new perspectives, social support, and resources. Despite these advantages to building external ties, we see relatively little of it in school systems. For example, a few years ago New York City reorganized its principals into networks, but only a subset used them as an opportunity to actively foster lateral idea and information exchange with other principals. Having said that, we have seen successful examples in the same district initiated by both the United Federation of Teachers and the Council of School Supervisors and Administrators, which have purposefully put into place programs to develop and foster exchange between their members across schools.

Having ties that cross school boundaries can benefit the individual teacher. This is probably obvious to anyone who's used Linked-in for a job search, or on-line community forums to get information. But actively fostering connections to other communities of teachers, educators, and others is also helpful from an instructional standpoint. In addition to providing new perspectives that allow the individual teacher to question her instructional approach and develop new skills and ideas, the same external networks can provide opportunities to influence those in one's own group. For example, for new teachers, being part of external networks can be a source of emotional support, a pathway towards legitimation in their new position and, through access to those outside networks, a resource to the existing teachers in the school they are joining.

We also found evidence regarding the value of crossing status boundaries within the school. We found that the students of teachers who report strong ties to principals and other school administrators show higher growth in math achievement. However, the underlying dynamics driving these effects are not well understood. As with much of the traditional management research on leader-subordinate relations, in the education literature any attention to such relationships in schools has tended to focus on the principal and her leadership style rather than the interaction between principals and teachers. Yet we have heard from a number of principals that they often seek advice from the stronger teachers in the school. Efforts to involve teachers in this manner can lead to enhanced trust between teachers and administration. In addition, relatively simple matters, like the span of control of a school administrator, may be important to improving administrator-teacher ties.

How do We Invest in Social Capital?

As our research has demonstrated, teacher social capital can have a powerful influence on student achievement, dwarfing the benefits of teacher education, credentialing, and other forms of human capital. At the same time, social capital can be the conduit that amplifies human capital and ensures that less-able teachers can learn from their high-performing counterparts. Not surprisingly, the most frequent question we are asked when we present our work to teachers, school administrators, and policy makers is "How do I enhance social capital in my school?" This is a question that does not have a quick or simple answer. Building social capital takes time, nurturing it takes commitment, and both are in short supply in many districts that are

pressed to delivery immediate results. Social capital is also context-specific so there is no rigid recipe for success. What works best in one school may not be work best in the next.

What we *can* offer, however, are evidence-based principles for building and sustaining school social capital. Here we organize our prescriptions around three objectives: (1) enhancing teacher embeddedness in the school; (2) creating a school culture of collaboration rather than competition among teachers; and (3) training and rewarding principals to be change agents through building external relationships. We discuss each in turn below and offer some examples and evidence-based guidelines for implementing each. It is important to note, however, that although we discuss each objective in turn, they are complimentary and reinforcing of one another.

1. Enhance Teacher Embeddedness in the School

Social capital takes time to build and is shaken by instability. Such instability in schools often takes the form of teacher turnover. Some schools in our large-scale research studies had annual teacher turnover rates approaching 40%, and the leadership in such schools was similarly unstable. While some level of turnover is generally positive for a system in terms of promoting innovation and beneficial change, high levels of turnover can be detrimental for two reasons. First, while new people bring new ideas, what can be lost is a sense of history and core mission, often referred to as “institutional memory”.^{xiv} Second, several studies have shown the detrimental effects of turnover on social capital, which subsequently results in decreased organizational performance.^{xv} In a large-scale study of over 180 schools, Shevchuk, Leana and Mittal (2009) found that losses in human and social capital due to turnover worked synergistically in influencing the effect of teacher retention on student achievement. Essentially, when turnover resulted in social capital losses in the school, subsequent student performance declined.^{xvi}

While these findings provide an evidence-based argument for the beneficial effects of stability in the teaching body of a school, the popular press (as well as political discourse) is rife with accusations of “dead wood” in schools and implicitly call for more, rather than less, turnover of teachers. Moreover, highly-experienced teachers seem to be the targets of such calls. Indeed, programs like Teach for America have as their implicit foundation the assumption that new college graduates with no teaching experience (or even a background in studying education)

will do a better job in the classroom than do those who have spent their careers as teachers. Evidence from our own research counters such assumptions. Indeed, in our research, teacher experience was the only dimension of human capital that even came close to the beneficial effects of social capital on student outcomes.

Why can teacher retention be so beneficial to student performance? A high rate of retention preserves not only the knowledge, skills and abilities available through retained teachers (human capital), but also the existing structure and character of the relationships among them (social capital). As we have previously stated, strong and dense ties among teachers within a school can serve as a repository of actual and potential resources. But these resources become inaccessible once the relationships are dissolved through turnover. And stability in the social structure of a school is a key factor affecting the creation and maintenance of its social capital. As Coleman noted, “disruptions of social organization or of social relations can be highly destructive to social capital.”^{xvii} By fostering stability within the fabric of social relations in a school, teacher retention thus facilitates the creation and maintenance of social capital. In this regard, school administrators should focus on teacher retention as an explicit policy goal.

2. Create a School Culture of Collaboration Rather than Competition

As we previously noted, most of the attention in school reform is centered on improving teacher human capital – or the knowledge, skills and abilities that individual teachers bring to the classroom. This attention to human capital goes by a number of monikers, including “teacher accountability”, and is at the heart of policy proposals ranging from pay-for performance schemes to test-based evaluations of teacher performance. Even programs with non-punitive aspects like “Teacher of the Year:” awards implicitly assume that problems of school performance will be best remedied through a laser focus on individual teachers. Our research findings challenge such approaches, arguing for more cooperation rather than competition among teachers. Indeed, in our large-scale studies, the benefits of enhanced social capital on student achievement far outweigh those of human capital. Indeed, we found that a one standard deviation increase in teacher human capital (as measured by a validated test of ability) was associated with a 2.2% gain in student achievement gains, while the same 1 standard deviation rise in social capital was associated with a 5.7% gain, an effect size that was almost three times greater.

In reviewing the empirical evidence, it is clear that social capital represents an important opportunity for school improvement. Yet getting school administrators and policy makers to see the value of social capital is not easy. And holding them accountable for it is harder still. One way to address this impasse is to make social capital a core component in formal evaluations of administrator effectiveness. School principals could be held responsible for conducting a social capital inventory in their school, and measuring the outcomes of increases or decreases in social capital. Such an inventory might include opportunities for teacher collaboration, programs for new teacher mentoring, retention rates of teachers, and the like. Outcomes of interest include teacher attitude surveys as well as student achievement gains. What such an inventory would *not* include, however, is so-called “instructional leadership” – a topic we will discuss in more detail below. For now, however, the point we are making is that the role of administrators is to value and facilitate the formation and maintenance of teacher social capital, but not to plan, organize and control it. Efforts aimed at the latter are bound to fail as they undermine the very nature of social capital, which is predicated on trust, open information exchange, and shared values. These cannot be legislated by overly-eager “instructional leaders” but they can be facilitated by providing resources in the form of rewards for peer-to-peer learning, school-based (vs. individual) incentives, and, most valuable of all, time in the school day for collaboration.

Another opportunity for building social capital is in the area of labor-management collaboration. It is fashionable now to lament the role of teachers’ unions in terms of the problems with public education in the U.S. Unions are said to protect poor teachers from being remediated or dismissed from their jobs, even with evidence of substandard performance. Unions are also held responsible for enforcing a tenure system that rewards longevity over competence, and undermines management discretion in the selection of new teachers.

Lesser known is the beneficial effect teachers’ unions have had in terms of providing much-needed stability in schools, as well as providing a path to building social capital. Saul Rubenstein and John McCarthy have conducted careful case studies of labor-management collaboration across several schools and districts that are instructive in terms of both the benefits of collaboration for student learning, and the ways in which such collaboration can be attained.^{xviii} As described earlier, we have found similar effects in our own work. Given this evidence, instead of being viewed as a detriment to building teacher human capital within

schools (e.g., because of enforcing rules on, say, seniority protections), unions could be more fruitfully viewed as an incubator for cultivating social capital.

3. Train and Reinforce Principals to Network Outside of School Boundaries

One of our first research projects regarding teacher social capital included all teachers and schools in a mid-sized urban district.^{xix} We assessed teacher social capital but we also focused on the role of the principal. In this study we had each principal keep a time diary whereby they recorded all of their activities during a typical work week. We were interested in both how principals spent their time and who they spent it with. We then looked at differences in time use and how well they predicted student achievement gains in math and literacy.

Our results were illuminating on a number of dimensions. First, there was a great deal of variability regarding the sheer amount of time principals put into their jobs. On average they worked about 48 hours per week. But there was great variability in the amount of time worked, ranging from a low of 37 hours to a high of 61 hours per week. Moreover, the total amount of time they spent at work was unrelated to student achievement gains. This suggests that it is not the amount of time spent on the job that mattered, but how that time was allocated. Here there were large differences.

We separated the various activities into four different domains: (1) so-called “instructional leadership”, which consisted of activities such as classroom observations, teacher development, and working on instruction and curriculum; (2) administration, which consisted of activities such as school record-keeping, facilities management and the like; (3) external relations, which included interactions with people outside the school including community members, potential supporters, and parents; and (4) personal development. By far the largest drain on principals’ time was administration, with principals spending an average of over 27 hours or 57% of their time on these activities. The smallest category was personal development, which occupied, on average, 3% of their time or about an hour-and-a-half per week.

Since our primary concern is with the effects of social capital, we were most interested in the time principals spent interacting with others, whether that was the teachers within the school or people outside the school. Here we found that principals spent, on average, about a quarter of their time on instructional leadership of teachers (about 12 hours per week), and roughly 14% of

their time (over 6 hours per week) on interactions with supporters or potential supporters outside the school. The first category – instructional leadership – can be thought of as an indicator of principals’ efforts to organize and control internal social capital, while the second category – external relations – is an indicator of principals’ efforts to build external social capital.

Here our findings were surprising regarding the benefits of principals’ activities for students. Neither administrative tasks nor instructional leadership moved the needle in terms of student achievement gains. But the opposite was true for activities aimed at building external social capital. Essentially, principals’ time spent building external social capital was the *only* activity that had a significantly positive effect on student achievement gains. The lesson from these findings was simple and clear: Principals can have the biggest impact on student achievement – and, in fact, the only significant impact – if they focus their time on developing relationships outside the school.

Needless to say, these findings were not well received by that portion of the education community that is invested in the value of instructional leadership by principals. But these results are, to our knowledge, the only rigorous examination of what principals actually do all day, and the effects of their day-to-day activities on student learning. While there are numerous studies of “school culture” and a veritable cottage industry promoting “principal leadership”, most of this research relies on qualitative case studies or soft self-reports of attitudes and perceptions rather than an examination of how principals actually spend their time. Indeed, when we asked principals to report on their perceptions of how they spent their time, there was a good deal of inconsistency in terms of their actual behavior. (And the old admonition of “watch what I do, not what I say” is an appropriate lesson here in terms of guiding future researchers on more rigorous approaches to studying principal leadership.)

But our findings were quite well received by teachers who indicated repeatedly that they would like their principals to spend far more time cultivating external relations and far less time acting in the role of “line foreman” monitoring teachers’ instructional practice. Overall, teachers believed that their principals could be far more effective if they spent more time with parents, community leaders, and potential sponsors, as well as “running interference” with the district leadership.

In terms of policy recommendations, these findings suggest that principal selection and training ought to be geared more toward developing expertise in activities outside the school. Such external networks bring benefits in several ways. First, outsiders have different information than insiders so the principal can act in the role of *innovator*, bringing teachers different perspectives and “best practices” from the outside, whether that be from other schools, other districts, or other types of organizations. Second, the principal can act in the role of *ambassador* for the school in securing support and other resources from parents, community groups, and potential funders. Third, the principal can be a *champion* of the school to the larger district, impressing upon district leaders the unique strengths of the school, as well as any particular needs the school might have.

Conclusion

Despite extensive reform efforts over the last decades, especially in schools with disadvantaged students – be it curricular reform, site based management, varied forms of student assessment, teacher penalties and incentives, etc. – the payoffs have not been as great as one might hope.^{xx} Clearly, a fresh, evidence-based approach is needed. A common refrain when we visit schools is “we’ve tried that”, where “that” is everything and anything school districts have thought of that could improve instruction, be it standardized curricula, coaches, long instructional blocks, frequent student assessment, etc., etc. Indeed, there is a palpable sense of burn-out with respect to new initiatives to improve instruction and student outcomes. Yet rarely heard in conversations with school administrators is a deep exploration of how a given change can enhance or, alternatively, adversely affect, the nature of social exchange that takes place across the professionals in the school. Indeed, our findings regarding social capital help explain why efforts like teacher merit pay programs have had little effect on student outcomes when the incentives are provide to individual teachers, but have a substantive effect when given to school-level groups of teachers.^{xxi}

Social capital can play a core role in efforts to enhance the educational process. At the same time, it is important to situate efforts in the broader context of other school reform changes. For example, there are on-going efforts to routinize and standardize how teachers teach. We know from other contexts that such approaches can work well when organizations are dealing with well-specified products to be developed, or well-articulated problems to be solved. But

they have not been shown to be very effective for complex, evolving challenges, like those associated with public education. In such circumstances, collaborative approaches have been shown to be far more beneficial as multiple individuals can bring ideas to the table to provide insight on how to address issues, resolve problems, or embrace opportunities. Teams with high levels of social capital provide solidarity and the norms of exchange that emerge enable the collective to target ambitious goals and collectively address setbacks and challenges.

Such an approach is sorely needed in public schools. But social capital, and the relationships that sustain it, do not emerge automatically. It requires time, active effort to encourage its development, and persistence. But its demonstrated benefits for teachers and students alike well justify the effort. Simply stated, an attention to social capital in schools is long overdue.

ⁱ L. Hanifan, "The rural school community center," *Annals of the American Academy of Political and Social Science*, 67 (1916): 130-138.

ⁱⁱ A. Hargreaves, "Contrived collegiality: The micro-politics of teacher collaboration", in *The Politics of Life in Schools: Power, Conflict, and Cooperation*, ed. J. Blasé (Newbury Park, CA: Sage, 1991). R. Warren, "Context and isolation: The teaching experience in an elementary school", *Human Organization*, 34 (1975): 139-148.

ⁱⁱⁱ See, for example, M. McLaughlin & J. Talbert, *Professional Communities and the Work of High School Teaching* (Chicago: University of Chicago Press, 2001) and A. Bryke & B. Schneider, *Trust in Schools: A Core Resource for Improvement* (New York: Russell Sage, 2002).

^{iv} J. Spillane, *Distributed Leadership* (NY: Jossey-Bass, 2006).

^v See Bryk & Schneider, *Trust in Schools*, McLaughlin & Talbert, *Professional Communities*, and A. Bryke et al. *Organizing Schools for Improvement: Lessons from Chicago* (Chicago: University of Chicago Press, 2009), as well as our own work in this space. Our work has focused on the importance of social capital to a community of teachers and schools more generally, including the ties between teachers and principals, and the external ties between school employees and the community. Other, more focused, work has looked at ties between teachers and students [for example, E. Saft & R. Pianta, "Teachers' perceptions of their relationships with students: Effects of child age, gender, and ethnicity of teachers and children", *School Psychological Quarterly*, 16(2001): 125-141; and C. Murray & K. Zvoch, "The inventory of teacher-student relationships: Factor structure, reliability, and validity among African American youth in low-income urban schools", *The Journal of Early Adolescence*, 31 (2011): 493-525]; ties among school leadership [J. Lima, "Social networks in teaching", *Social Geographies of Educational Change*, (2004): 29-46; and Spillane (2006)]; and ties between schools and parents [E. Horvat, E. Weininger & A. Laureau, "From social ties to social capital: Class differences in the relations between schools and parents network", *American Educational Research Journal*, 40 (2003): 319-351.]

^{vi} See, for example, C. Leana, E. Appelbaum & I. Shevchuk, "Work process and quality of care: Encouraging positive job crafting in childcare classrooms", *Academy of Management Journal*, 52 (2009): 1169-1192; C. Leana, J. Meuris & C. Lambertson, "More than a feeling: The role of empathetic care in promoting safety in healthcare" (working paper, Center for Healthcare Management, University of Pittsburgh, 2016); F. Pil & T. Fujimoto, Lean and reflective production: The dynamic nature of production models", *International Journal of Production Research*, 45 (2007): 3741-3761; F. Pil & J.P. MacDuffie, "What makes transplants thrive: Managing the transfer of best practice at Japanese auto plants in North American", *Journal of World Business*, 34 (2000): 372-391.

^{vii} C. Leana & F. Pil, "Social capital and organizational performance: Evidence from urban public schools", *Organization Science*, 17 (2006): 353-366; F. Pil & C. Leana, Applying organizational research to public school reform: The effects of teacher human and social capital on student performance", *Academy of Management Journal*, 52 (2009): 1101-1124; C. Leana, "The missing link in school reform," *Stanford Social Innovation Review*, 9 (2011): 30-35.

^{viii} These dimensions were first articulated in abstract fashion by J. Nahapiet & S. Ghoshal, "Social capital, intellectual capital, and the organizational advantage", *Academy of Management Review*, 23 (1998): 242-266.

^{ix} Pil and Leana, 2009. *Applying organizational research*.

^x J. Coleman, *Foundations of Social Theory*, Cambridge MA: Harvard University Press, 1990), 304.

^{xi} Indeed, almost two decades ago, Hansen and colleagues [M. Hansen, J. Podolny & J. Pfeffer, "Social networks in organizations – capital or liability? (working paper, Harvard Business School, 1999)] argued that strong relations not

only take time to build, but require effort to maintain. In the same vein, Portes and Landolt [A. Portes & P. Landolt, "The downside of social capital", *The American Prospect*, 94 (1996): 18-21] suggest that the social resources claimed *from* the collective by some teachers need to be provided *to* the collective by others – a non-trivial burden to the contributors to the collective.

^{xii} This refers to the concept that as individuals learn together, they develop an understanding of the material they are being taught, but also a sense of how knowledge is distributed among others undergoing training.

^{xiii} M. Rubio, "Perverse social capital – some evidence from Columbia", *Journal of Economic Issues*, 31 (1997): 805-816.

^{xiv} For a general discussion see C. Leana and D. Rousseau, *Relational Wealth: The Advantages of Stability in a Changing Economy* (New York, Oxford University Press, 2000).

^{xv} Leana, Appelbaum and Shevchuk, *Work process and quality of care*; J. Shaw., M. Duffy, J Johnson, J. & D. Lockhart,. "Turnover, social capital losses, and performance", *Academy of Management Journal*, 48 (2005):594-606; G. Dess, G. & J. Shaw, J., "Voluntary turnover, social capital, and organizational performance", *Academy of Management Review*, 26(2001): 446-456; K. Kacmar et al., "Sure everyone can be replaced ... But at what cost? Turnover as a predictor of unit-level performance", *Academy of Management Journal*, 49 (2006): 133-144.

^{xvi} I. Shevchuk, C. Leana and V. Mittal, "Teacher retention and school performance: The role of organization- and task-specific forms of human and social capital", (working paper, Center for Healthcare Management, University of Pittsburgh, 2009).

^{xvii} Coleman, *Foundations of Social Theory*, 320.

^{xviii} S. Rubenstein & J. McCarthy, "Union-management partnerships, teacher collaboration, and student performance", *Industrial and Labor Relations Review*, (2016)

^{xix} Leana and Pil, *Social capital and organizational performance*.

^{xx} For a well-written critique and call for more scientific evidence to back up school reform efforts, see B. Schneider & V. Keelser, "School reform 2007: Transforming education into a scientific enterprise", In *Annual Review of Sociology*, ed. D.S. Massey & K. Cook (Palo Alto CA: Annual Reviews, 2007).

^{xxi} M. Springer et al., "Teacher pay for performance: Experimental evidence from the project on incentives in teaching" (National Center for Performance Incentives, Vanderbilt University, 2010); K. Muralidharan & V. Sundararaman, "Teacher performance pay: Experimental evidence from India" (working paper, NBER, 2009).