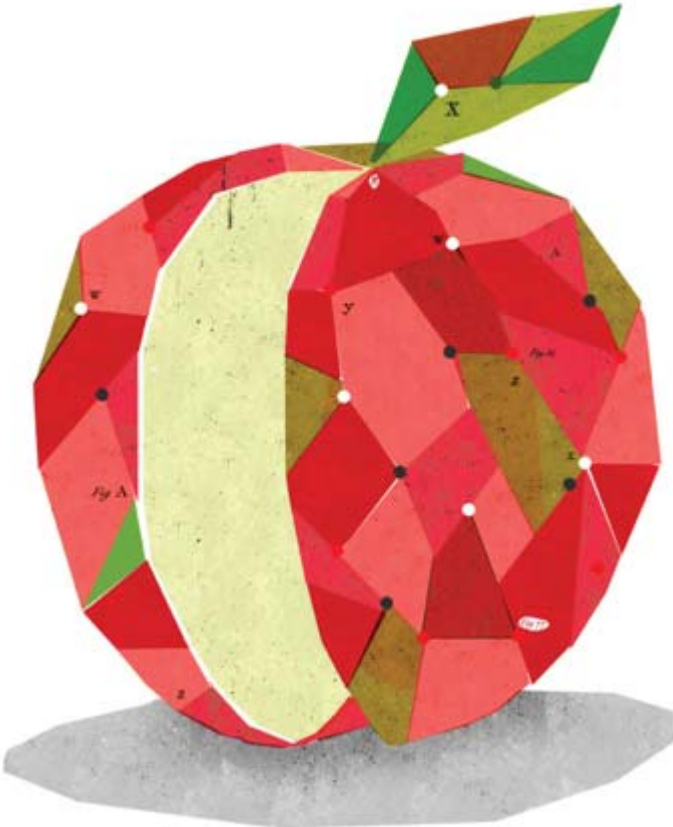


STANFORD SOCIAL INNOVATION *review*

The Missing Link in School Reform

In trying to improve American public schools, educators, policymakers, and philanthropists are overselling the role of the highly skilled individual teacher and undervaluing the benefits that come from teacher collaborations.

By Carrie R. Leana Fall 2011



In *Waiting for Superman*, the 2010 documentary that describes the failure of American public education, several children and their families, along with educators like Geoffrey Canada and philanthropists like Bill Gates, drive home the argument that the key to school reform lies in improving the competence and skills of individual teachers. Making the case for a crisis in K-12 education is not difficult. Open any newspaper and you are likely to find an article reporting on the sorry state of US public education. Student competence in basic subjects like math and reading is alarmingly low and trails that of other nations. Three in 10 public school students fail to finish high school. Graduation rates for students in some minority groups are especially dismal, with just over half of Hispanics (55.5 percent) and African Americans (53.7 percent) graduating with their class.¹

President Barack Obama and others have expressed concern about American students' deficiencies in math and science. In comparisons among OECD member countries, 15-year-olds in the United States markedly lag in mathematics, trailing their counterparts in 30 other countries, including China, France, and Estonia.² This should not be surprising, as a little more than a third of fourth-graders in US public schools were proficient in mathematics in 2009. Although this represents a considerable rise from 22 percent in 2000, gains have stalled

in the last five years, and fourth-graders' math proficiency actually declined in the United States between 2007 and 2009.³ Performance gets even worse as students move on to secondary school; only 26 percent of US high school students are proficient in math.

This disappointing performance has led educators, policymakers, and parents to search for ways to improve student achievement in schools. Foundations, too, are focusing on school reform, with the largest and most powerful, the **Bill & Melinda Gates Foundation**, providing hundreds of millions of dollars in funding to initiatives for improving teacher competence and accountability. The accountability models increasingly in fashion find their roots in the discipline of economics rather than education, and they are exemplified in the value-added metrics now gathered by large urban school districts. These metrics assess annual increments in each student's learning derived from standardized tests in subject areas like math and reading, which are then aggregated to arrive at a score for a teacher—her “value added” to students' learning. Anyone can go to the website of the **Los Angeles Times** and find a ranking based on these scores for every teacher in the Los Angeles Unified School District. Needless to say, many teachers and the unions that

represent them are opposed to value-added models, arguing that they fail to capture the complex factors which go into teaching and learning.

Value-added modeling is one example of a larger approach to improving public schools that is aimed at enhancing what economists label “human capital”—factors such as teacher experience, subject knowledge, and pedagogical skills. If a teacher’s human capital can be increased, films like *Waiting for Superman* argue, the United States would be well on the way to solving its alarming educational problem. But the research my colleagues and I at the University of Pittsburgh have conducted over the past decade in several large urban school districts suggests that enhancing teacher human capital should not be the sole or even primary focus of school reform. Instead, if students are to show measurable and sustained improvement, schools must also foster what sociologists label “social capital”—the patterns of interactions among teachers.⁴

In addition to targeting teacher human capital, many believe that a key to improving public schools lies in bringing in people outside the school, or even the school district, to solve problems. These outsiders often take the form of curriculum consultants and pedagogy “experts” from university schools of education or of teacher-to-teacher “coaches” supplied by the district office. But they also include people with almost no experience in education or public schools. Here the examples are numerous, such as the **Teach for America** program, which seeks out recent graduates of elite colleges to temporarily join the teaching corps in the toughest schools; or the district-financed leadership academies, which select aspiring principals partly because they lack experience in education; or the recent installation (and removal) of Cathleen Black, a magazine publisher with virtually no experience in education, as chancellor of the New York City public school system.

A natural extension of the belief in the power of outsiders is the notion that teacher tenure is the enemy of effective public education. Governors of Florida, Indiana, Nevada, New Jersey, and Tennessee all have introduced measures calling for the dismantling of teacher tenure in their states’ public schools. Implicit in such arguments is the assumption that the ranks of senior teachers are plagued by incompetence and that the less experienced would do better in their place.

A third belief centers on the role of the principal. In many reform efforts, the principal is cast as the “instructional leader” who is responsible for developing and managing pedagogical practice. In many of the current principal training programs, principals are taught how to manage curriculum, monitor lesson plans, evaluate teachers, and hold them accountable for student progress. In the language of business, the principal is a line manager expected to be a visible presence in the classroom, ensuring that teachers are doing their jobs. The principal is likewise a hands-on “super teacher” whose primary job is to be involved in the day-to-day business of instructional practice.

These three beliefs—in the power of teacher human capital, the value of outsiders, and the centrality of the principal in instructional practice—form the implicit or explicit core of many reform efforts today. Unfortunately, all three beliefs are rooted more in conventional wisdom and political sloganeering than in strong empirical research. Together they constitute what I call the ideology of school reform. And although this, like all ideology, may bring us comfort in the face of uncertainty and failure, it is unhelpful and perhaps dangerous if it leads us to pursue policies that will not bring about sustained success. Our research suggests that there is some truth to the predominant ideology. Teacher competence *does* affect student learning. Outsiders *can* bring fresh ideas and enthusiasm to tired systems. And principals *do* have a role in reform efforts. At the same time, our findings strongly suggest that in trying to improve public schools we are overselling the role of human capital and innovation from the top, while greatly undervaluing the benefits of social capital and stability at the bottom.

To be clear: I am not opposed to recognizing the contributions of outstanding teachers or to holding bad teachers accountable for poor performance. But I believe in the power of objective data. The results of our research challenge the prevailing centrality of the individual teacher and principal leadership in models of effective public education. Instead, the results provide much support for the centrality of social capital—the relationships among teachers—for improving public schools. (See “How to Reform Public Schools” on opposite page.) Our results suggest that we need to broaden the focus on teacher human capital to an approach that supports both human *and* social capital development for teachers.

WHAT IS SOCIAL CAPITAL?

In the context of schools, human capital is a teacher’s cumulative abilities, knowledge, and skills developed through formal education and on-the-job experience. For many years, teacher human capital was thought to be attained through a combination of formal education and certification both before entering the profession and throughout the course of a teacher’s career. This has been a boon to the universities that provide such training, but several studies conducted largely by economists have shown little relationship between a teacher’s accumulation of formal education

and actual student learning. In our studies, teacher educational attainment similarly shows little effect on improving student achievement.

Due partly to the questions raised by these studies, recent approaches to developing teacher human capital have looked beyond formal educational requirements. Many approaches emphasize ongoing professional development. At a different end of the spectrum are the approaches of education economists, who use value-added modeling to tie teacher performance directly to student achievement with the effect of exposing underperforming teachers. A variant of this is merit pay, which monetarily rewards teachers whose students demonstrate high achievement and sometimes imposes a financial penalty on teachers whose students perform poorly.

Social capital, by comparison, is not a characteristic of the individual teacher but instead resides in the relationships among teachers. In response to the question “Why are some teachers better than others?” a human capital perspective would answer that some teachers are just better trained, more gifted, or more motivated. A social capital perspective would answer the same question by looking not just at what a teacher knows, but also where she gets that knowledge. If she has a problem with a particular student, where does the teacher go for information and advice? Who does she use to sound out her own ideas or assumptions about teaching? Who does she confide in about the gaps in her understanding of her subject knowledge?

Social capital is a concept that gained traction in sociology with the publication of James Coleman’s work comparing students in public and parochial schools. He found that parochial school students performed better and attributed this to the social links among parents and within neighborhoods, which strengthened student support systems. In business, social capital has received attention because of its role in creating intellectual resources within a firm.⁵

Our research shows that social capital is also at work in schools. When a teacher needs information or advice about how to do her job more effectively, she goes to other teachers. She turns far less frequently to the experts and is even less likely to talk to her principal. Further, when the relationships among teachers in a school are characterized by high trust and frequent interaction—that is, when social capital is strong—student achievement scores improve.

RESEARCH FINDINGS

Although we have conducted studies of teacher human and social capital in several school districts, I will focus here on a large-scale project conducted in the New York City public schools. Between 2005 and 2007, we followed more than 1,000 fourth- and fifth-grade teachers in a representative sample of 130 elementary schools across the city. We examined one-year changes in student achievement scores in mathematics. That is, we looked at how much each student’s knowledge of mathematics advanced in the year he or she spent with a particular teacher. We also took into account the economic need, attendance, and special education status of a child, because these factors might affect not just the level of student learning but also the rate of learning growth.

We examined several facets of teacher human capital, including experience in the classroom and educational attainment, as predictors of student achievement gains. We also had all teachers respond to a series of classroom scenarios developed and validated at the University of Michigan, which measured each teacher’s ability to instruct children in the logic of mathematics.⁶ Thus our human capital indicators included teacher education, experience, and ability in the classroom.

In addition to these more objective indicators, we surveyed more than 1,200 kindergarten through fifth grade teachers in one New York City subdistrict and asked them to report how competent they felt teaching particular aspects of math. We found that many elementary school teachers reported that they did not like to teach math and did not feel particularly competent at it. Teachers in the early grades were particularly uncomfortable, but even in fifth grade, three in 10 teachers expressed little confidence in their preparation for teaching basic math concepts like ratios and fractions. As explained by one New York City math coach: “Elementary school teachers are math-phobes. They are scared of teaching math because they don’t feel like they’re very good at it themselves.”

So we asked the teachers whom they talked to when they had questions or needed advice. Did they go to other teachers, to the school principal, or to the coaches hired by the district specifically to help them to be better math teachers? And how much did they trust the source of the advice they received? What we found is that in most instances teachers seek advice from one another. Teachers were almost twice as likely to turn to their peers as to the experts designated by the school district, and four times more likely to seek advice from one another than from the principal. As one New York City teacher explained, “It’s dangerous to express vulnerability to experts or administrators because they will take your professional status away” and replace it with scripted textbooks.

How to Reform Public Schools

THE PREDOMINANT IDEOLOGY

Power of the Individual: Reform efforts are focused on improving the capabilities of the individual teacher.

Wisdom of the Outsider: Bring in outside experts—or even novices—to solve problems.

Principal as Instructional Leader: The principal is the leader of school instructional reform.

THE REALITY

The Power of the Collective: The teaching staff is engaged in school reform collectively.

Reform from Within: Trust and meaningful communication among teachers are the bases of true reform efforts.

Principal as Protector: The principal supports teacher reform efforts through building external relations.

Most striking, students showed higher gains in math achievement when their teachers reported frequent conversations with their peers that centered on math, and when there was a feeling of trust or closeness among teachers. In other words, teacher social capital was a significant predictor of student achievement gains above and beyond teacher experience or ability in the classroom. And the effects of teacher social capital on student performance were powerful. If a teacher's social capital was just one standard deviation higher than the average, her students' math scores increased by 5.7 percent.

One New York City teacher described how social capital works in her school: "Teaching is not an isolated activity. If it's going to be done well, it has to be done collaboratively over time. Each of us sets our own priorities in terms of student outcomes. For example, one teacher might emphasize students knowing all the facts and operational skills. Another might think that what's most important is to develop a love of learning in students. Still another teacher might want to develop students to be better critical thinkers and problem solvers, and they're not as concerned about students memorizing the facts. A good teacher needs to help students develop all of those things, but it's easy to get stuck in your own ideology if you are working alone. With collaboration, you are exposed to other teachers' priorities and are better able to incorporate them to broaden your own approach in the classroom."

What happens when you combine human and social capital? What if teachers are good at their jobs *and* also talk to one another frankly and on a regular basis about what they do in math class? If human capital is strong, individual teachers should have the knowledge and skills to do a good job in their own classrooms. But if social capital is also strong, teachers can continually learn from their conversations with one another and become even better at what they do.

Our results in New York City confirmed this expectation. We found that the students of high-ability teachers outperformed those of low-ability teachers, as proponents of human capital approaches to school improvement would predict. More significant were the interactions between human and social capital. Students whose teachers were more able (high human capital) and also had stronger ties with their peers (strong social capital) showed the highest gains in math achievement. Conversely, students of teachers with lower teaching ability (low human capital) and weaker ties with their peers (weak social capital) showed the lowest achievement gains. We also found that even low-ability teachers can perform as well as teachers of average ability *if* they have strong social capital. Strong social capital can go a long way toward offsetting any disadvantages students face when their teachers have low human capital.

I interviewed a teacher from a California school district who provided a vivid example of how human and social capital can be mutually reinforcing: "In my school, we ask teachers to set up a schedule where they observe someone else's classroom at least twice a year. Teachers really see the benefit, and we get 80 to 90 percent voluntary participation. So not only does the teacher who is being observed get peer feedback, but the observing teachers learn new methods or approaches. With new teachers this is really important, and most are really grateful for the help. One year I had a brand-new teacher who had never really taught before. She spent every one of her prep periods just observing my class and what I taught, and then she would do the same thing in her class a few days later. This sort of modeling was really helpful to her in developing her own competence and confidence."

In presenting these results to education experts, I generally find that there are lots of questions and a great deal of interest. When I present them to teachers, the results immediately resonate and many express relief that their informal work networks are finally being recognized as a valuable resource. When presenting them to school administrators, however, I have faced more skepticism and some unwillingness to let go of long-held beliefs about the need to monitor

teachers and set strict guidelines for practice in the classroom. Such skepticism is captured in the words of Michele Rhee, the ousted superintendent of the Washington, D.C., school district and an ardent supporter of reform efforts that stress scripted approaches to teaching. According to Ms. Rhee, “cooperation, collaboration, and consensus building are way overrated.”⁷

VALUE OF TEACHER EXPERIENCE

Teacher tenure is a topic of intense debate among education policymakers. Opponents argue that tenure systems shelter the worst teachers from dismissal or even remedial action. As New Jersey Gov. Chris Christie said recently, teacher tenure is a system “where excellence is not rewarded and failure is not disciplined.”⁸ New York City Mayor Michael Bloomberg has long argued against the “last in, first out” protection that tenure provides, asserting that by allowing more senior teachers to keep their jobs in tough times and laying off less experienced teachers, the district as a whole suffers.

Proponents argue that tenure protects experienced teachers from bad administrators and allows teachers to use their own professional judgment to make decisions in the classroom. After all, who is better positioned to make pedagogical decisions than the teachers who have day-to-day responsibility for student learning? These views on teacher tenure are in stark opposition to each other, although both arguments center on the value of teacher experience to student success. Tenure proponents explicitly argue for the centrality of experience in the making of a good teacher, whereas opponents of tenure implicitly undervalue experience.

Although our research does not tackle the complex social and political aspects of the tenure debate, our results in New York City clearly come down on the side of teacher experience, showing that greater tenure in the classroom leads to higher student achievement gains. There is one caveat to this finding, however, and it concerns where that experience is gained. Students show stronger growth in math achievement when their teacher has spent more time teaching *at the same grade level*. The value of experience—and the growth in teacher knowledge that accompanies it—is found in what psychologists call contextualized learning or, in the case of elementary school teachers, learning how to teach children at a particular point in their chronological development.

To illustrate, let’s compare two hypothetical teachers, both of whom have five years of experience teaching elementary school math. Susan Monroe has spent all five years teaching fourth-graders, while colleague Catherine Carpenter has spent two years teaching second-graders, two years teaching fourth-graders, and one year teaching fifth-graders. Our results show that Monroe’s students are likely to outperform Carpenter’s students. Why would this be? One could argue that Carpenter has had more diverse assignments and thus broader experience, and that her students should benefit from the breadth of human capital she’s developed. But Monroe has stayed with fourth-graders and, although she hasn’t had the breadth of Carpenter’s experience, she has developed depth in her human capital. Learning mathematics—even at the elementary level—appears to be a sufficiently complex enterprise that the depth of teacher experience matters more than the breadth of experience.

Another factor might be the enhanced social capital that comes with tenure in one grade. Like most urban school districts, in New York City there is a significant movement of teachers from school to school and even outside of the district. We found that one-year teacher turnover rates averaged almost 20 percent in the 130 schools in our study. One cost to such high turnover is that when teachers leave, they take with them not just their human capital but their social capital as well. So if Monroe moves to a different school, not only does she take with her the knowledge gained from five years of experience teaching math to fourth-graders (a loss of human capital), but her absence also disrupts the network of relationships that the fourth-grade teachers in the school have built with one another (a loss of social capital). In some New York City schools, particularly those with a challenging student body, teacher turnover rates averaged 40 percent and more *each year*. With all the movement, many teachers felt that spending time on developing social capital was not a good investment: No one expected to be there very long.

At the same time, social capital can be a lifeline in chaos. I recently talked to a teacher who described her experience in a troubled San Francisco elementary school after being involuntarily transferred to teach in a new grade. “I taught fourth grade for two years, then, without asking, I got switched to third grade. I really wasn’t sure what I was doing, and there were so many content areas that I had never taught before, so I wasn’t sure what to emphasize and what the kids were likely to struggle with,” says the teacher. “I was fortunate in that I signed up voluntarily for a program that was available called Peer Assistance and Review, where an experienced third-grade teacher was my mentor, available to be my sounding board, and give me guidance and new ideas that weren’t in the textbook. We had a set time to work together every week, but I talked to her informally nearly every day. This was just invaluable to me and showed the power of peer-to-peer learning.”

In our research we found social capital losses to be highly detrimental to student achievement. We compared the rates of turnover in each of the 130 schools in our New York City study and related those to student achievement. As we expected, the higher the teacher turnover rate at the school, the lower the student achievement gains the following year. But it also mattered which teachers left, in terms of their levels of human and social capital. When teacher turnover resulted in high losses of either human or social capital, student achievement declined. But when turnover resulted in high losses of *both* human and social capital, students were particularly disadvantaged. These results show that teacher tenure can have significant positive effects on student achievement.

PRINCIPALS AS EXTERNAL FACILITATORS

Teachers are not, of course, the only school professionals who have been the focus of reformers. Principals, too, have been in the spotlight with much of the recent activity centered on training them to serve as the school leader of pedagogical change. To address the role of the principal, I will draw on data we collected in the Pittsburgh public schools over the past decade. In this study we examined human and social capital among teachers, but here we also focused on what the principal did to enhance or hinder teachers' efforts. We used a time diary method, asking principals to record all their activities during a typical workweek. To ensure that principals were recording activities in real time, we had each principal carry a PDA and record activities when prompted by a beeper.

We found that principals, like most managers, multitask in their jobs and also do a significant amount of unplanned work each day. On average, principals recorded more than 60 distinct tasks in a five-day workweek. As expected, they spent the largest portion of their time—an average of 57 percent, or 28 hours per week—on administrative matters like facility management and paperwork. They spent a far smaller portion of their time—25 percent on average—on instructional activities like mentoring and monitoring teachers. Still less of their time—14 percent on average—was spent on external relations like meeting with parents, developing community relations, going to community meetings, and interacting with outsiders, such as foundations and publishers, to enhance the school's resources. But it is this latter class of activities—which can be conceived of as building *external* social capital—that made the difference both for teachers and for students.

When principals spent more time building external social capital, the quality of instruction in the school was higher and students' scores on standardized tests in both reading and math were higher. Conversely, principals spending more of their time mentoring and monitoring teachers had no effect on teacher social capital or student achievement. The more effective principals were those who defined their roles as *facilitators* of teacher success rather than instructional leaders. They provided teachers with the resources they needed to build social capital—time, space, and staffing—to make the informal and formal connections possible.

APPLYING RESEARCH TO PRACTICE

What do these findings tell us about effective education policy? First, they suggest that the current focus on building teacher human capital—and the paper credentials often associated with it—will not yield the qualified teaching staff so desperately needed in urban districts. Instead, policymakers must also invest in measures that enhance collaboration and information sharing among teachers. In many schools, such social capital is assumed to be an unaffordable luxury or, worse, a sign of teacher weakness or inefficiency. Yet our research suggests that talking to peers about the complex task of instructing students is an integral part of every teacher's job and results in rising student achievement.

Second, our findings suggest that there is not enough emphasis on the value of teacher stability. We found direct, positive relationships between student achievement gains in mathematics and teacher tenure at grade level and teacher social capital. This suggests that current political efforts to undercut teacher stability and experience may come at a very steep cost.

Third, our results question the conventional wisdom about the power of the principal as the internal leader of teachers in school reform efforts. Principals spending their time on instructional activities and teacher interaction had no effect on teacher social capital or student achievement. But principals who spent more of their time on collaborating with people and organizations outside the school delivered gains to teachers and students alike.

Building social capital in schools is not easy or inexpensive. It requires time and typically the infusion of additional teaching staff into the school. It requires a reorientation away from a Teacher of the Year model and toward a system that rewards mentoring and collaboration among teachers. It also asks school principals and district administrators to become more external in their focus—spending less time looking over teachers' shoulders and more time on collaboration with potential outside supporters of teachers' efforts. But after decades of failed programs aimed at improving student achievement through teacher human capital and principal leadership, such investments in social capital are cheap by comparison and offer far more promise of measurable gains for students.

Notes

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- 5 James Coleman, "Social Capital in the Creation of Human Capital," *American Journal of Sociology* 94, 1990: 95-120; Janine Nahapiet and Sumantra Ghoshal, "Social Capital, Intellectual Capital, and the Organizational Advantage," *Academy of Management Review* 23, 1998: 242-266.
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- 7 Michelle Rhee in a speech at the Aspen Institute Education Summit, Mayflower Hotel, Washington, D.C., Sept. 15, 2008.
- 8 "N.J. Governor Puts Teacher Tenure in Hot Seat," National Public Radio, All Things Considered, Jan. 17, 2011.

Carrie R. Leana is the George H. Love Professor of Organizations and Management at the University of Pittsburgh, where she holds appointments in the Graduate School of Business, the Graduate School of Public and International Affairs, and the School of Medicine. Her current research is focused on organizational processes and employee outcomes, with a particular emphasis on the nonprofit service sector.

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