All of this constitutes the climate for investing in professional capital. In poor conditions of high fear and low support, teachers will be unlikely to invest in each other or even in themselves. In confident climates that encourage growth and even a little risk because they provide an essential underpinning of security, the chances of teachers investing in their own development and reaping the rewards of high quality in their practice are considerably greater.

THREE KINDS OF CAPITAL

In the world of business and finance, if you want to get a return, you have to make an investment. And if you want to make an investment, you need to have capital to invest. Whether you are Adam Smith, Karl Marx, or Warren Buffett, the rules are pretty much the same. In this section, we set out the case for *professional capital* that consists of the confluence of three other kinds of capital: human, social, and decisional.[15] It is the presence and product of these three forms of capital that is essential for transforming the teaching profession into a force for the common good.

Professional capital is essential for effective teaching, and it is most essential in the most challenging educational circumstances. We can now express it in a formula (Figure 5.1), where PC is professional capital, HC is human capital, SC is social capital, and DC is decisional capital. Effective teaching for the whole profession is a product of these three kinds of capital amplifying each other. Let's examine this powerful phenomenon more closely.

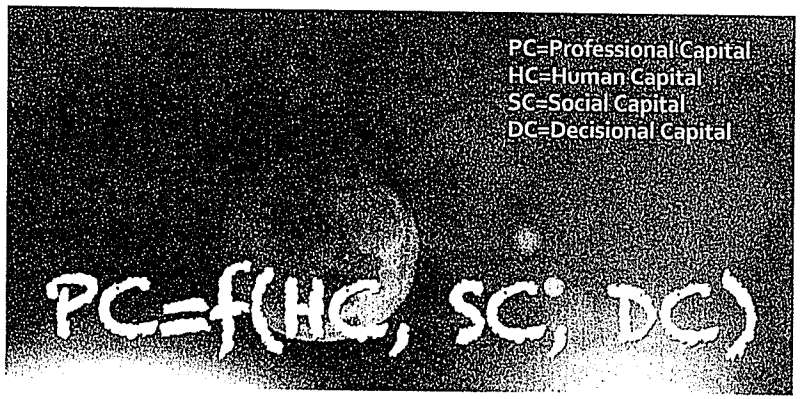

FIGURE 5.1 Formula for Professional Capital

Human Capital

For a long time, capital was largely viewed as a financial phenomenon that came out of economic production. But in the 1960s, a group of economists pointed to the importance of another kind of capital: *human capital.*[16] This concept referred to the economically valuable knowledge and skills that could be developed in people—especially through education and training. In the *human capital* view of education and economies, investing in people's education and development brings economic returns later on. Indeed, it is now accepted wisdom that the sooner people start their education in early childhood, at home or at school, and the longer their period of schooling, then the more economic returns a nation will get on this investment in its people. Education is a capital investment—and so too is teaching.

Human capital in teaching is about having and developing the requisite knowledge and skills. It is about knowing your subject and knowing how to teach it, knowing children and understanding how they learn, understanding the diverse cultural and family circumstances that your students come from, being familiar with and able to sift and sort the science of successful and innovative practice, and having the emotional capabilities to empathize with diverse groups of children and also adults in and around a school. It is about possessing the passion and the moral commitment to serve all children and to want to keep getting better in how you provide that service. Human capital is about individual talent.

As we said in Chapter 1, you cannot increase human capital just by focusing on it in isolation. Some of the most powerful, underutilized strategies in all of education involve the deliberate use of teamwork—enabling teachers to learn from each other within and across schools—and building cultures and networks of communication, learning, trust, and collaboration around the team as well. If you want to accelerate learning in any endeavor, you concentrate on *the group.* This is *social capital.*

Social Capital

In the 1980s and beyond, the concept of capital and its relationship to education took another metaphorical leap. Economist James Loury first brought *social capital* into the modern limelight in the 1970s.[17] In the late 1980s, sociologist James Coleman put it front and center in his influential analysis of the reasons for high-school dropout and why educational outcomes varied between Catholic schools and regular public schools.[18]

Social capital, Coleman said, exists in the relations among people. It's a resource for them. And like economic and human capital, it contributes to productive activity. "For example, a group within which there is extensive trustworthiness and extensive trust is able to accomplish much more than a comparable group without that trustworthiness and trust."[19] Groups with purpose that are based on trust also learn more. They get better at their work.

Social capital refers to how the quantity and quality of interactions and social relationships among people affects their access to knowledge and information; their senses of expectation, obligation, and trust; and how far they are likely to adhere to the same norms or codes of behavior. In families, social capital "depends both on the physical presence of adults in the family and on the attention given by the adults to the child."[20] In blunter terms, if the lights or the DVD are on, but nobody is physically or psychologically "home," there are going to be grave deficiencies of social capital.

Social capital increases your knowledge—it gives you access to other people's *human capital.* It expands your networks of influence and opportunity. And it develops resilience when you know there are people to go to who can give you advice and be your advocates. In *Bowling Alone,* Robert Putnam famously bemoaned the decline of social capital and community life in modern American society.[21] The decline of public schools in the United States has also weakened social capital in urban communities, as connecting with others in those communities through one's children is a prime way to build relationships with neighbors.

Much more recently, Wilkinson and Pickett, in their intriguingly titled book *The Spirit Level,* show that societies with low levels of trust have higher levels of income inequality.[22] People who are insulated from each other by income, in different neighborhoods or even gated communities, don't trust people they don't know. The same patterns hold between different states in the United States—high-trust states have smaller income disparities than low-trust states.

Social capital is significant in education too. We have already seen how it affects high-school dropout rates. Coleman's Catholic schools did better, he said, because they had a clearer sense of common mission and stronger relationships organized around it. And in their modern classic *Trust in Schools,* Tony Bryk and Beverly Schneider demonstrate that among public schools in Chicago that deal with similar kinds of students, the ones that reach greater achievement levels have higher levels of trust between teachers and students, parents, administrators, and colleagues—levels that precede the gains in achievement.[23] It's not just a correlation—it's cause and effect. Trust and expertise work hand in hand to produce better results.

Unfortunately, the development of social capital as a strategy has not yet caught on in the teaching profession. Alan Odden doesn't mention it at all in his otherwise fine treatment of human capital in education.[24] Ironically, some of his most powerful learning examples involve teachers working together, but he doesn't connect the dots. For us, social capital strategies are one of the cornerstones for transforming the profession. Behavior is shaped by groups much more than by individuals—for better or worse. If you want positive change, then get the group to do the positive things that will achieve it.

People have begun to tap into the ideas of social capital among students and their families—arguing that it is students from disadvantaged homes especially who are often lacking the networks of trust, information, support, and advocacy that can help them succeed.[25] But the concept has not yet been applied to the performance and success of teachers—yet the connections are already there for all to see. Every time you increase the purposeful learning of teachers working together, you get both short-term results and longer term benefits as teachers learn the value of their peers and come to appreciate the worth of constructive disagreement. There are many examples of this. Critical friends networks, for example, give teachers constructive and also challenging feedback with the aid of protocols that create a safe environment in which these conversations can occur. Moderated marking similarly enables teachers to learn from each other with expert facilitation as they examine student work according to standards-based criteria. These expressions of social capital are an asset that keeps on giving. They are a kind of "collective capacity" that can extend to whole-system reform.

The research project by Carrie Leana that we cited in Chapter 1 makes the point about the power of social capital and its relationship to human capital simply but powerfully.[26] Recall that she measured both human capital (the qualities of individual teachers) and social capital (how much teachers worked together) in 130 elementary schools in New York City. She compared mathematics scores of students at the beginning and end of 1 year, and found that the students of teachers who reported higher social capital had a higher increase in mathematics scores, and that even teachers with lower human capital did better if they were in a school with greater social capital. Using our words, business capital is a "wrong driver," social capital a "right driver." Cohesive groups with less individual talent often outperform

groups with superstars who don't work as a team. We see it in sports all the time. With professional capital, you get both because the expertise of both individuals and the group develop in concert.

What Leana is getting at, we believe, is a significant part of what we identify as *professional capital*—the resources, investments, and assets that make up, define, and develop a profession and its practice—be this in law, medicine, sports, or education. Her work points to how business capital that wants to lower the investment and strip down assets for temporary, short-term gains is a wrong driver in education, while human capital and especially social capital are the right drivers that keep on growing and giving.

Contrast Leana's findings with the rather perplexing research that claims to show that professional development (PD) does not make much difference in student outcomes. In their large-scale studies, Garet and his colleagues examined the impact of PD in early reading instruction and in middle school math. In both cases, teachers had 8 full days of professional development, and one group had individual coaching between sessions.[27]

Garet and colleagues found some evidence that teachers retained knowledge from the PD experience, but they also discovered that this knowledge did not result in change in practice and that consequently there was no impact on student achievement. Moreover, after 2 years, even the knowledge that teachers had initially acquired no longer remained. This could, of course, be interpreted to mean that PD is simply a wasted investment that could justifiably be cut when resources are scarce. Yet PD has little or no impact when it relies on "individual learning" and does not focus on follow-through support for teams of teachers to learn together. Not all or even most professional development, until now, has been *good* professional development. Working with big ballroom audiences, or conducting training workshops outside of school, or using one-to-one coaching to enforce compliance with imposed programs, has little deep or long-standing impact on teachers' daily practice.

What is crucial is what happens between workshops. Who tries things out? Who supports you? Who gives you feedback? Who picks you up when you make a mistake the first time? Who else can you learn from? How can you take responsibility for change together? The key variable that determines success in any innovation, in other words, is the degree of social capital in the culture of your own school. Learning is the work, and social capital is the fuel. If social capital is weak, everything else is destined for failure.

Decisional Capital

But even human capital and social capital are not enough. There is still something missing. We call it *decisional capital.* The essence of professionalism is the ability to make discretionary judgments. When you put a difficult question to an employee and he asks you to wait until he consults his supervisor, you know that person is not professional because he can't exercise any discretion. If a teacher always has to consult a teacher's manual, or follow the lesson line-by-line in a script, you know that teacher is not a professional either, because he or she doesn't know how to judge or isn't being allowed to.

Judges have to judge even when the evidence isn't conclusive. In fact, if the evidence *were* conclusive, there would be no need for judges at all. Doctors have to judge when they examine a set of symptoms or interpret a brain scan. Teachers have to judge when they treat acting out by one child differently from how they treat another—because they know different things about those children: how they learn, what frustrates them if they have a disability, and so on. You can't be a judge if you can't judge—and you can't be a doctor or a teacher (or at least an effective one) if you can't judge either. The capacity to judge and judge well depends on the ability to make decisions in situations of unavoidable uncertainty when the evidence or the rules aren't categorically clear.

We take the idea of *decisional capital* from case law, though it could come just as easily from any other profession. Decisional law is "the law as determined by reference to the reported decisions of the courts."[28] In Anglo-American legal systems, this is known simply as *common law.* Becoming a lawyer in these systems involves remembering reams of factual information but also understanding how this mass of information relates to and can be interpreted through particular cases. Case law is always developing as cases refer to and move on from each other over time. This kind of law sets out the facts of the case but also describes how judges came to their decision, including the judges who held minority dissenting views.

If you know how to examine a case and have practiced this with hundreds or even thousands of cases, alongside partners, associates, and other counsel, then eventually you know how to judge. *Decisional capital* here is the capital that professionals acquire and accumulate through structured and unstructured experience, practice, and reflection—capital that enables

them to make wise judgments in circumstances where there is no fixed rule or piece of incontrovertible evidence to guide them. Decisional capital is enhanced by drawing on the insights and experiences of colleagues in forming judgments over many occasions. In other words, in teaching and other professions, social capital is actually an integral part of decisional capital, as well as an addition to it.

Lawyers qualify for their profession and develop their professional capacity in part by studying lots and lots of cases, first from the textbook and then in the context of practice, in real time. Judith Shulman and others introduced case analysis into teacher education as a way to try to develop the same capacities to act and judge among beginning teachers.[29] Medical students learn the capacity to diagnose and judge in part by accompanying surgeons and other doctors on medical rounds or "walkthroughs" of the hospital, as they view different patients and discuss their symptoms, conditions, and treatment. Attempts to introduce "walkthroughs" or "instructional rounds" into schools—where school leaders and an entourage of teachers or other leaders go from classroom to classroom to witness and then discuss classroom instruction—reflect similar efforts to adapt the study of cases so educators can judge good or bad instruction when they see it.[30]

The transpositions of case methods or medical rounds from law and medicine into education have probably tried to mimic practice in these two giant professions a bit too closely, though. Case analysis won't have lasting effects in teaching if, like inquiry projects, beginning teachers know they can drop it as soon as they start teaching for real. Instructional rounds will lose their power in schools if teachers twist what they do to conform to "correct practice" because they are afraid of their superiors or have their eye on their next performance-related pay packet. Medical and legal techniques of case analysis have perhaps been applied a bit too literally to education, then. But the central principle remains important: you get better at making discretionary judgments when you have lots of practice examining your own and other people's judgments, with your colleagues, case by case.

Practice, deliberately pursued, really does make perfect. In his best-selling book *Outliers,* Canadian writer Malcolm Gladwell brought this simple principle to widespread popular attention. In a chapter on exceptionally high performance, he discussed a classic study that compared amateur and professional pianists:

> The amateurs never practiced more than about three hours a week over the course of their childhood, and by the age of twenty they had totaled two thousand hours of practice. The professionals, on the other hand, steadily increased their practice time every year, until by the age of twenty, they had reached ten thousand hours.[31]

Ten thousand hours, Gladwell says, is the figure that comes up time and again as the number of hours it seems to take the brain "to assimilate all that it needs to know to achieve true mastery."[32] This is true in music, professional sports, or any other especially accomplished area in life. It's what separates professionals from the rest.

In any profession, it's important to practice, to keep practicing, and to get the opportunity to practice. Gladwell points out that "even Mozart—the greatest musical prodigy of all time—couldn't hit his stride until he had his ten thousand hours in."[33] Recall the work of Chris Day and his team that highlighted the career stage when teachers were, on average, really striding high? It was the stage that began about 8 or 10 years into the job. And how many hours do you think teachers have been teaching by this point? The exact answer varies a bit depending on the system you are in, but in the main, it's about 10,000! Of course, this doesn't mean that every teacher who has clocked up these hours is necessarily a maestro by this point. It depends on what the hours are like. And it doesn't rule out the prior learning or previous hours that incoming teachers might already have accumulated in sports coaching, youth work, or leadership of young people in general, which might shorten the hours needed to become truly expert when they start teaching for real. But, on average, with these hours behind them, the evidence is clear that teachers have attained higher proficiency than their colleagues who have put in less time.

So it's practice and a great deal of it that develops your *decisional capital,* that makes you a skilled professional and not just a keen amateur. Leave teaching before you've put in your 8 years and you will never develop decisional capital and therefore professional capital to a high level. If recruitment and reward systems in teaching are based on acceptance and even advancement of the idea that many teachers will or should move on after 3–5 years, before their wages rise or their resistance kicks in, then the development of professional capital in individual teachers is prevented, and professional capital is depleted from the system—all for a quick gain under a

business capital model that sees public education as a cost instead of an investment.

Decisional capital is also sharpened when it is mediated through interaction with colleagues (social capital). The decisions get better and better. High-yield strategies become more precise and more embedded when they are developed and deployed in teams that are constantly refining and interpreting them. At the same time, poor judgments and ineffective practices get discarded along the way. And when clear evidence is lacking or conflicting, accumulated collective experience carries much more weight than idiosyncratic experience or little experience at all.

REFLECTIVE PRACTICE

Practice makes perfect, then—but not by itself. You have to have the means of learning from practice and making judgments with new cases as they come. If you are Canadian and over 30, you likely know the name of Lucien Bouchard. Bouchard became premier of Quebec in 1995 just after the people in the province narrowly decided not to separate from the rest of Canada. Bouchard is also one of the most famous casualties of necrotizing fasciitis, or flesh-eating disease, which led, in 1994, to the amputation of his leg. Without accurate diagnosis and treatment, this disease, in which bacteria eat away a person's flesh at frightening speed, has a high probability of being fatal.

One of us has a daughter who, as a teenager, returned from a camping trip with intense redness on her torso. Within hours, most of her torso had turned violet. She was rushed to the hospital Emergency Room, where flesh-eating disease was one of the suspected diagnoses. In the end, the doctors judged it was probably another infection that would respond to strong steroids. They were right—it did. Had their judgment been wrong, however, she would likely be dead by now. So nobody knows more than us that good medical judgment really matters.

Necrotizing fasciitis is not an easy condition to diagnose, as signs on the surface of the skin can be a poor indicator of what is going on beneath. Boston hospital physician and journalist Atul Gawande discussed an interesting case of flesh-eating disease in his first book, *Complications*.[34] The case says a lot about medical judgment. Gawande describes what he and his colleagues did when a 23-year-old woman came to the Emergency Room with a swollen foot. In many areas of medicine, Gawande points out, the data don't

speak for themselves, and medicine often isn't the clinically precise scienc we imagine it to be. "The gray zones are considerable," he says. Flesh-eatin disease is one of these vast gray zones.

Gawande and his colleagues performed lots of tests, all of which pointe to a superficial infection. But something intuitive, deep inside Gawande' gut and contrary to all the objective evidence available, told him it coul still be the more serious condition. So, prompted by the patient's parent, th doctors gladly sought another opinion and took a couple of biopsies, whic revealed, deep down beneath the skin, traveling up the bone, the signs o this fast-moving, killer disease.

The resulting operation almost certainly saved the young woman's life. Bu it was an operation brought on not by objective tests alone, or by the certain ties of scientific evidence, but by a hunch, a bit of intuition, alongside and i some ways in defiance of that evidence—a hunch that was not shoulder alone but discussed and shared with committed and concerned colleagues.

Medicine, Gawande tells us, is an "imperfect science" that operates in a environment where there is "a great deal of uncertainty about what to do fo people."[35] X-rays, scans, tests, and biopsies tell you some things but nc everything—they still have to be interpreted, and then there are other sign and symptoms to take into account alongside them. This is where intuitio comes in—something seemingly mystical and magical which is actually perception or a judgment that may be hard to articulate but that is based o years of knowledge and experience.

Intuition isn't always reliable though. Gawande shows that doctors ca make spectacularly inaccurate judgments—sometimes with complete confi dence. This is when practice matters. If you can, try to avoid having an acci dent on a Sunday, because that's when the hospital is staffed by junior doc tors, and juniors make more errors than experienced colleagues because the have just had less practice. A second opinion also matters—the opportunit to reflect on intuition and to compare it with the experiences and percep tions of colleagues. In other words, it's more likely that practice will mak perfect when it is shared and also when it is thoughtful and reflective.

In the 1980s, Boston-born philosopher and erstwhile jazz pianist Don ald Schön, who helped found the study of organizational learning, wrote remarkable series of books about reflective practice and reflective practitio ners.[36] Schön was critical of what he called *technical rationality*—the beli that science and objective evidence would provide all the answers in profes sional practice. He wouldn't be impressed with data warehouses or with th