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In the midst of a great unemployment crisis, there is also a yawning talent gap. For the marketing function or the factory floor, recruiters seek applicants with the scientific knowledge, communication skills, and technological acumen that many high school graduates (and even some college graduates) lack. That's why business leaders are pushing for school reform with such urgency; they see public schools as both suppliers of talent and incubators of the future, and they want to help education leaders become more effective.

Unfortunately, most business–education partnerships have been formed around a core set of school reform ideas that can be appealing in theory but don't seem to work in practice. These include competition-based reforms, including most voucher and charter school systems, incentive pay for teachers, some management training programs for education leaders, and the intensive use of digital educational technology.

One basic attitude underlying these reforms is that schools need to be run more like businesses. In practice, that means adopting a competitive management style that imposes numerical goals, rewards high performers disproportionately, blames labor unions for poor performance, and forces each individual to prove his or her value every day. In other words, school reformers are promoting top-down, carrot-and-stick, compliance-driven management ideas that (as quality-

movement leader W. Edwards Deming and others have pointed out) are unreliable and, in many cases, counterproductive — even in business.

Moreover, virtually all the studies on key reform initiatives, including the charter movement and merit pay for teachers, suggest that these measures have failed to improve education outcomes. Two of many examples: A 2009 study by Stanford's Center for Research on Education Outcomes found that only 17 percent of charter schools earned better test scores than traditional schools, and 37 percent did significantly worse. A major 2010 study by Vanderbilt University found that teachers who were offered a US$15,000 bonus for improving student test scores over a three-year period performed no differently than teachers who weren't included in the offer.

"[The effort] to improve the quality of education turned into an accounting strategy: Measure, then punish or reward," writes Diane Ravitch in *The Death and Life of the Great American School System: How Testing and Choice Are Undermining Education* (Basic Books, 2011). "The strategy produced fear and obedience among educators; it often generated higher test scores. But it had nothing to do with education."

As for digital technology, there is still virtually no conclusive research on what works and what doesn't in K–12 education. Many companies interested in studying the impact of technology on schools — including Apple, Microsoft, Cisco Systems, News Corp., and a lot of smaller media and software companies — have a stake in this potential $500 billion business, which makes it difficult to tell which assessments are disinterested and reliable.

Illustration by Lars Leetaru

How, then, should businesspeople who are genuinely interested in school reform take on the challenge? Start by recognizing that you have a great deal to offer education — if you can draw on the most collaborative, generative aspects of business thinking and action, following the examples of companies that promote transparency, engagement, shared accountability, continuous improvement, and organizational learning. For example, a recent study by Rutgers School of Management and Labor Relations, "Collaborating on School Reform," shows that contrary to popular practice and the dictates of many corporate education reformers, the secret to long-term improvement for teachers, schools, and students is "substantive collaboration" at all levels — the classroom, the school, the district, the community; in short, collaboration among all key stakeholders.

Many educators appreciate the value of participative management and leadership training. "If you are trying to run a system as large as a small city, you need a diverse set of skills," says Shael Polakow-Suransky, senior deputy chancellor for the New York City Department of Education, noting that when the city's education system was controlled almost entirely by educators, it was "incredibly poorly run." When the district began to draw talent from the private sector in the 1990s, he adds, there were some false starts in which businesspeople clashed with educators. "We learned that we need both [forms of expertise]," he says. (See "Leadership Principles for Public School Principals," by Andrea Gabor, *s+b,* Summer 2005.)

On the ground, the most effective business–education partnerships are those that foster innovative

education opportunities in which both students and parents can participate, and those that create bridges between schools and the outside world, including potential employers. The following stories demonstrate some of the principles that help these partnerships work. What distinguishes them from many outright failures is the quality of collaboration. In these examples, business leaders did more than donate funds and technology; rather, schools and businesses sought to learn from one another.

Fostering Tech Experiments

Many education reformers have applauded the potential of technology: netbooks, video learning, and electronic educational games. But in practice, technology designed for consumers and homeschooling is not well suited to the needs of inner-city kids or to use within the public school classroom. Computer infrastructure hardware company Cisco Systems began to experiment in the mid-2000s, in partnership with

petencies to help [school districts] think through their processes…and to build their capacity to manage technology."

One Cisco partnership, called the 21st Century Schools Initiative, was established with eight school districts in Louisiana and Mississippi in 2005, after Hurricane Katrina. Donations of equipment and the testing of new technologies were balanced with opportunities for entrepreneurship and new types of training. For example, Jefferson Parish has a large suburban school system with 88 schools, just outside New Orleans in the Mississippi Delta lowlands, where the majority of students are poor and black or Latino. After the storm and flooding destroyed many school buildings there, Cisco donated equipment, including whiteboards and laptops (Jefferson Parish has a one-laptop-per-student policy), as well as professional-development training. The company was also instrumental in the district's decision to hire a chief technology officer.

The most effective partnerships create bridges between schools and the outside world.

schools, to find more effective ways to introduce technology to classrooms. Its experiments demonstrate the promise and value of these projects, and the difficulties involved in maintaining them.

"Cisco is not an education technology company, it's a networking IT company," explains Mary Anne Petrillo, Cisco's senior marketing manager for corporate social responsibility. "We bring our core com-

In another partnership, the New York City Department of Education (NYCDOE) embraced Cisco in 2009 as a "thought partner" in its iZone (for "innovation zone") program. With funding from local business leaders as well as Cisco, the iZone was intended to help schools become seedbeds of freewheeling, learning-oriented activity, using technology and other measures (including extended days). Students,

teachers, and school administrators were all encouraged to tap real-world expertise and integrate it with school curricula.

During the iZone's first year, Cisco provided funding and training. Teachers came to Cisco offices in Manhattan for several all-day sessions covering a variety of classroom technologies — including tutorials on teleconferencing with outside experts, using PowerPoint presentations, and making videos. Cisco also sought to learn from the schools, sending teams of engineers into their classrooms to see how teachers and students used digital technology.

Since then, the iZone has been reorganized three times. It is now a two-tiered experiment. More than 100 schools take part in a limited version, with online access to education software. About 25 schools participate in a more comprehensive initiative called iZone360, in which each student receives a laptop, and the program provides schools with "innovation coaches" who advise them on technology and other reform ideas.

At their best, partnerships like Cisco's in Jefferson Parish and New York represent a virtuous circle in which a company helps school dis-

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tricts develop priorities, strategies, and expertise while educators help the business understand how technology is used on the ground, enabling the business to develop more useful products.

But close ties between companies and school districts also mean that conflicts of interest, real or

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perceived, can arise. In New York, Cisco, which officially maintains a "Chinese wall" separating its business and philanthropic interests, gave iZone free access to a sophisticated Web portal it was developing for sale to other school systems. Then, in August 2010, the NYC-DOE abruptly reduced Cisco's role in iZone, and replaced the Cisco portal with much more limited off-the-shelf software. The reasons for this shift were never entirely explained; the NYCDOE said that Cisco had fallen behind schedule. For its part, the company still officially supports the iZone project in New York. But a number of iZone principals and teachers, who were counting on working with Cisco, were disappointed.

To maintain credibility and avoid suspicion, transparency is critical. For example, more transparency might have saved the Cisco portal, which was considered by educators who had seen the technology to be much better than the NYCDOE's alternative.

In Louisiana, the challenge

came with assessing the value of the partnership. One report, by the Center for Children and Technology, found that Cisco's partnership with the local school district had helped "launch a dramatic educational transformation." At the same time, progress has lagged expectations. Although Jefferson Parish ranks sixth

out of 60 Louisiana school districts in percentage performance gains between 2008 and 2011, the district still received a "D" on its state evaluation, based on 2011 student test scores. Lessons learned from Cisco's experience indicate that business–education partnerships should:

• Be set up so that all aspects of the project are transparent to outsiders, even if corporations profit from the R&D

• Foster experimentation, because it is not always clear in advance which ideas and projects will work best

• Establish in-depth training for every new technology, with businesspeople and educators learning from each other.

Collaborating for Change
One of the first schools to join New York City's iZone was Global Technology Preparatory, a three-year-old middle school in Harlem. The school's first principal, Chrystina Russell, explicitly sought to leverage the school's resources by collaborating with outsiders, including philan-

thropies and businesses.

Teamwork was an explicit aim when Russell began recruiting teachers. During the summer of 2009, she corralled prospective faculty members for regular Sunday brunches at the home of Global Tech's assistant principal-in-training, Jacqueline Pryce-Harvey. A Jamaican immigrant who holds a Ph.D. in geography, Pryce-Harvey is also a master cook who once worked as a personal chef for New York socialite Brooke Astor. Over gourmet food, the teachers brainstormed Global Tech's curriculum, ways to recruit kids, criteria for new hires, and a strategy for introducing technology into the classroom.

The meals underscored the collaboration and flexibility that Russell would expect from her staff — and that she insists is crucial to a successful school — as well as an implicit understanding that teaching responsibilities do not stop when school ends at 3:30 p.m. Global Tech relies on partnerships inside and outside the school, but Russell maintains focus on the core values that she and her staff have identified, rather than outside agendas. For example, every student received a laptop to work with at school, courtesy of the iZone and corporate donations, but Global Tech did not hire outside technology experts for training. Instead, Russell chose to rely on a few tech-savvy teachers from within the school to help coach the staff and students, reinforcing the school's collaborative culture.

In addition, Russell enlisted Computers for Youth, a program that provides free desktop computers loaded with educational software and training for poor families; the program is designed to teach parents how to help their children with schoolwork. She also teamed up with Citizen Schools, a nonprofit after-school learning program that extended Global Tech's school day to 6 p.m. Students get homework help and academic enrichment, and they participate in hands-on apprenticeship programs that are run by local professionals and businesses, including engineers from Google, who teach rudimentary programming. Another way that Russell has made the most of collaborative teamwork is in the mainstreaming of special education students. Both Russell and Pryce-Harvey are former special education teachers, and 31 percent of Global Tech students are certified as needing special education. Almost all of them are placed in "integrated co-teaching" (ICT) classes that are team taught and include non–special ed students. There is a clear expectation that by the time the special ed students graduate eighth grade, most will be able to function in a regular class.

The role that collaboration has played in this effort was highlighted in 2011 when Josniel Martinez, a Global Tech seventh grader, was selected to introduce U.S. Education Secretary Arne Duncan at the White House launch of Digital Promise, a national center founded to spur development of breakthrough education technologies. Standing at the lectern in front of more than 100 dignitaries, the 11-year-old Dominican émigré explained how he had been failing sixth grade until the school put together "a whole team to help" him. The team, he explained, included teachers who aided him with his "nightmarish" organization skills and checked his backpack every day for the pencils, assignment sheets, and other items he needed to succeed in class; Computers for Youth, which provided extra software for the home computer they had given him; and his mother, who insisted he work on the software programs three times a week and cut back on TV. "Now look at me in 10 years, Secretary Duncan," he concluded. "Because I'm going to college…and maybe one day, you'll be working for me."

Global Tech's collaborative approach has produced impressive results in a short time. Many students start school 15 minutes early to take advantage of free computer time. The school got an "A" on its 2011 progress report and was ranked in the top 5 percent of all middle schools in New York City. On a 2011 Learning Environment Survey, Global Tech scored higher than 90 percent in parent, teacher, and student satisfaction.

Another indicator that Global Tech's approach is working is the number of people who have succeeded there after being written off in other schools. This includes some teachers. For example, math teacher David Baez was recruited from a dysfunctional school in the Bronx where, as a young teacher, he was rated unsatisfactory by a supervisor. Today, visitors flock to Baez's math classes, which combine old-fashioned instruction with online math games and visuals. Baez has won thousands of dollars in grants, as well as a prestigious Math for America fellowship that comes with a $15,000 annual stipend. He was also selected as one of six New York City teachers to be part of the Digital Teacher Corps, a Ford Foundation–funded collaboration among educators, technologists, and designers formed to develop interactive digital learning tools.

The collaborative, entrepre-

neurial culture of Global Tech is usually associated with business startups, not with schools (or, for that matter, with many corporations). Whether school leaders can keep it going will depend on how well the school continues to foster a culture of collaboration both inside

designed to give young people the requisite math and science education to fill entry-level jobs in the oil patch. Since its inception, the IPAA has opened petroleum academies within four public schools in the Houston area. These include Milby High School, which has a student

Milby graduated its first petroleum academy class in 2010. Of the 80 students in the starting cohort, 62 are going to four-year colleges, almost all on scholarships. Most of those who did not enroll in a four-year college are going to community college. By contrast, among the Milby students who did not attend the petroleum academy, only 37 percent enrolled in a four-year college, and 46 percent entered a community college.

The experience of the petroleum academies in Houston suggests that business–education partnerships should integrate business-oriented subject material into the established curriculum and design recruiting efforts accordingly. They should also scale up slowly, starting with just a few schools and learning from the experience of the first group.

In the most successful experiments, such as Global Tech and the petroleum academies, innovation becomes everyone's job.

the school and with partners in the outside world.

Global Tech's experience indicates that business–education partnerships should:

• Bring together school leaders, teachers, nonprofits, and business collaborators to brainstorm and plan innovative efforts

• Focus attention on the problems that school leaders and teachers identify as important

• Foster a participative staff and student culture that echoes the best of the business culture around them

• Document successes and failures so that other schools can learn from them.

Houston's Petroleum Academies
In Houston, a public–private partnership was established in 2005 between the school systems and a petroleum industry group, the Independent Petroleum Association of America (IPAA). The partnership was deliberately set up to bridge a growing shortage of energy workers, by providing a program of industry-tailored advanced-placement courses within selected public schools,

body that is largely poor and Latino, and the Young Women's College Preparatory Academy.

In these schools, teachers receive training to help tailor courses across the curriculum to the academy's energy focus. For example, in addition to teaching standard literature courses, Milby offers lessons in "technical English," designed to help students focus on reading and comprehending nonfiction texts. A typical assignment might include writing a persuasive essay on the value of renewable versus nonrenewable energy. Similarly, an algebra course may focus on data analysis in the petroleum industry.

The IPAA's education advisory committee includes many local companies from the oil and gas industry; these firms provide funding, internships, and speakers to the schools. For example, Milby, the IPAA's first petroleum academy, received $115,000 worth of laptops from Shell. Halliburton Company has donated $27 million of geoscience and engineering software to make it possible for Milby to teach elective courses in those fields.

Gaining Better Experience
The most realistic road to school reform starts with recognition that business has a tremendous — and growing — stake in the success of public schools. That is why business–education partnerships are likely to proliferate, especially as schools and school districts struggle. In the most successful experiments, such as Global Tech and the petroleum academies, innovation becomes, almost literally, everyone's job. Just as school administrators, teachers, and students can learn from business executives, companies interested in education reform would do well to learn from the schools they want to help. The challenges they face, as well as the remedies that work best, might surprise them. ✚

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