CHAPTER 1

The Flat World, Educational Inequality, and America’s Future

The best employers the world over will be looking for the most competent, most creative, and most innovative people on the face of the earth and will be willing to pay them top dollar for their services. . . . Beyond [strong skills in English, mathematics, technology, and science], candidates will have to be comfortable with ideas and abstractions, good at both analysis and synthesis, creative and innovative, self-disciplined and well organized, able to learn very quickly and work well as a member of a team and have the flexibility to adapt quickly to frequent changes in the labor market as the shifts in the economy become ever faster and more dramatic. If we continue on our current course, and the number of nations outpacing us in the education race continues to grow at its current rate, the American standard of living will steadily fall relative to those nations, rich and poor, that are doing a better job. The core problem is that our education and training systems were built for another era, an era in which most workers needed only a rudimentary education. It is not possible to get where we have to go by patching that system. We can get where we must go only by changing the system itself.

—The New Commission on the Skills of the American Workforce, 2007

The 21st century is characterized by the availability of abundant information, advanced technology, a rapidly changing society, greater convenience in daily lives, and keener international competition. In response to these changes, our Education Reform should aim at nurturing in the new generation characteristics and abilities capable of meeting the challenges of the new century. . . . Education Reform must be student-focused . . . to develop the potential and personalities of students. This student-focused spirit underlines the education and curriculum reforms, improvement to the learning environment, and enhancement of teacher training.

—Hong Kong Education Commission, June 2003
In the last decade, mountains of reports have been written in countries around the world about the need for more powerful learning focused on the demands of life, work, and citizenship in the 21st century. The process of managing decisions and solving social and scientific problems in contemporary democracies is growing ever more complex. At least 70% of U.S. jobs now require specialized knowledge and skills, as compared to only 5% at the dawn of the last century, when our current system of schooling was established. These new skills include the capacity to:

- Design, evaluate, and manage one’s own work so that it continually improves
- Frame, investigate, and solve problems using a wide range of tools and resources
- Collaborate strategically with others
- Communicate effectively in many forms
- Find, analyze, and use information for many purposes
- Develop new products and ideas

Furthermore, the nature of work will continue to change ever more rapidly. During much of the 20th century, most workers held two or three jobs during their lifetimes. However, the U.S. Department of Labor estimates that many of today’s workers will hold more than 10 jobs before they reach the age of 40. The top 10 in-demand jobs projected for 2010 did not exist in 2004. Thus, the new mission of schools is to prepare students to work at jobs that do not yet exist, creating ideas and solutions for products and problems that have not yet been identified, using technologies that have not yet been invented.

Is our society ready to take on this challenge? Are we able to provide education that will develop these more complex skills—not just for a small slice of students who have traditionally been selected for the kind of ambitious learning represented in elite schools and advanced programs, but for the vast majority of children in communities across the country? Or will we be waylaid by our long-standing tradition of unequal education coupled with our inability, thus far, to move from a factory model approach to education designed at the end of the 19th century to one that is pointed clearly and unambiguously at the demands of the 21st?

This book takes on these questions, arguing that the United States needs to move much more decisively than it has in the last quarter century to establish a purposeful, equitable education system that will prepare all our children for success in a knowledge-based society. This means moving beyond a collection of disparate and shifting reform initiatives, only occasionally related to what we know about teaching...
and learning, to a thoughtful, well-organized, and well-supported set of policies that will enable students to learn how to learn, create, and invent the new world they are entering. It also means finally making good on the unmet American promise that education will be made available to all on equal terms, so that every member of this society can realize a productive life and contribute to the greater welfare.

During his recent historic campaign for the presidency, Barack Obama described the large race- and class-based achievement gaps we experience as "morally unacceptable and economically untenable." At a time when three-quarters of the fastest-growing occupations require postsecondary education, our college participation rates have slipped from 1st in the world to 16th, and only about one-third of our young people receive a college degree.4 Meanwhile, in many European and some Asian nations, more than half of young people are becoming college graduates. At a time when children of color comprise a majority in most urban districts, and will be a majority in the nation as a whole by 2025,5 we face pernicious achievement gaps that fuel inequality, shortchanging our young people and our nation. Today, in the United States of America, only 1 in 10 low-income kindergartners becomes a college graduate. A greater number join the growing ranks of inmates in what the New York Times recently dubbed our "prison nation."6

At a time when high school dropouts are unlikely to be able to secure any job at all, our high school graduation rates—stuck at about 70%—have dropped from first in the world to the bottom half of industrialized nations. At a time when advances in science and technology fuel economic growth in East Asian and European nations, our students rank near the bottom of industrialized countries in math and science achievement. If these trends continue, by 2012 America will have 7 million jobs in science and technology fields, "green" industries, and other fields that cannot be filled by U.S. workers who have been adequately educated for them.7

As Americans seek to deal with the effects of the monetary meltdown that became an economic tsunami by the time President Obama was inaugurated, it is critical to realize that financial responses alone won't ultimately safeguard our economic and social well-being, and that substantial, strategic investments in education are essential to our long-term prosperity and to our success as a democracy. We cannot just bail ourselves out of this crisis. We must teach our way out. How we can and must do that is the subject of this book.

EDUCATION IN OUR FLAT AND CHANGING WORLD

The world is changing, and as Tom Friedman has demonstrated, it is increasing flat.8 Globalization is changing everything about how we work, how we communicate, and, ultimately, how we live. Employers can distribute their activit
around the entire globe, based on the costs and skills of workers in any nation that has built an infrastructure for transportation and communications. Customers in the United States buy their clothes from China and the Philippines, and have their questions about the new computer they bought answered by workers in India.

As manufacturing jobs have become automated or moved overseas, the entire structure of the U.S. economy has drastically changed. Whereas in 1967, more than half (54%) of the country’s economic output was in the production of material goods and delivery of material services (such as transportation, construction, and retailing), by 1997, nearly two-thirds (63%) was in the production of information products (such as computers, books, televisions, and software) and the provision of information services (such as telecommunications, financial services, and education). Information services alone grew from about one-third to more than half of the economy during that 30-year period.9

Meanwhile, knowledge is expanding at a breathtaking pace. It is estimated that five exabytes of new information (500,000 times the volume of the Library of Congress print collection) was generated in 2002, more than three times as much as in 1999. Indeed, in the 3 years from 1999 to 2002, the amount of new information produced nearly equaled the amount produced in the entire history of the world previously.10 The amount of new technical information is doubling every 2 years and it is predicted to double every 72 hours by 2010.11 As a consequence, education can no longer be productively focused primarily on the transmission of pieces of information that, once memorized, comprise a stable storehouse of knowledge. Instead, schools must teach disciplinary knowledge in ways that focus on central concepts and help students learn how to think critically and learn for themselves, so that they can use knowledge in new situations and manage the demands of changing information, technologies, jobs, and social conditions.

These are not new skills, but they were not envisioned for most students in the school system we designed between 1900 and 1920. That system was based on the factory model then made popular by Henry Ford’s assembly line. The notion was that one could organize all of the facts needed into a set body of knowledge and divide it up neatly into the 12 years of schooling, doling out the information through graded textbooks and testing it regularly. By the 1950s, “modern” methods allowed the accrual of knowledge to be evaluated with multiple-choice tests that could be scored exclusively by machine, without the involvement of teachers or the complications of asking students to produce and defend their own ideas.

This transmission-oriented curriculum was designed to be delivered in large impersonal factory-model schools that passed students off from one teacher to the next from year to year and, by junior high school, from subject area to subject area every 50 minutes. Tracking systems were invented to provide a basic skill's eur.
riculum to the children of the poor, and a more thinking-oriented curriculum to the more affluent, who were taught in separate "lanes," "tracks," or "streams," or in small elite private schools and public schools in wealthy districts. And while efforts to change this "one best system" have been the object of reforms over several decades, these features remain substantially in place in most U.S. schools—often reinforced by the very reforms that were launched to change them, but that reverted to old paradigms along the way.

Meanwhile, other nations around the world are transforming their school systems to meet these new demands. They are expanding educational access to more and more of their people, and they are revising curriculum, instruction, and assessment to support the more complex knowledge and skills needed in the 21st century. Starting in the 1980s, for example, Finland dismantled the rigid tracking system that had allocated differential access to knowledge to its young people and eliminated the state-mandated testing system that was used for this purpose, replacing them with highly trained teachers and curriculum and assessments focused on problem solving, creativity, independent learning, and student reflection. These changes have propelled achievement to the top of the international rankings and closed what was once a large, intractable achievement gap.

In the space of one generation, South Korea moved from a nation that educated less than a quarter of its citizens through high school to one that now ranks third in college-educated adults, with most young people now completing postsecondary education. Starting in the 1970s, Singapore began to transform itself from a collection of swampy fishing villages into an economic powerhouse by building an education system that would ensure every student access to strong teaching, an inquiry curriculum, and cutting-edge technology. These countries have created high and equitable achievement, despite high levels of poverty and growing ethnic and linguistic diversity among their citizens.

In Singapore, for example, 80% of families live in public housing, yet its 4th- and 8th-grade students scored first in the world in both mathematics and science on the TIMSS (Trends in International Mathematics and Science Study) assessments in 2003. When children leave the tiny, spare apartments they occupy in concrete high-rises throughout the city, they arrive at colorful, airy school buildings where student artwork, papers, projects, and awards are displayed throughout; libraries and classrooms are well-stocked; instructional technology is plentiful; and teachers are well-trained and well-supported.

With few natural resources, Singapore recognizes that its human capital will determine its future. Building on its ongoing efforts, former prime minister Goh Chok Tong led the tiny nation in adopting a system-wide reform in 1997 called "Thinking Schools, Learning Nation." The Ministry of Education explains that this initiative is meant to create:
a nation of thinking and committed citizens capable of meeting the challenges of the future, and an education system geared to the needs of the 21st century. Thinking schools will be learning organizations in every sense, constantly challenging assumptions, and seeking better ways of doing things through participation, creativity and innovation. Thinking Schools will be the cradle of thinking students as well as thinking adults and this spirit of learning should accompany our students even after they leave school. A Learning Nation envisions a national culture and social environment that promotes lifelong learning in our people. The capacity of Singaporeans to continually learn, both for professional development and for personal enrichment, will determine our collective tolerance for change.16

This spirit of creativity and innovation is visible throughout the schools, which are encouraged to engage both students and teachers in experiential and cooperative learning, action research, scientific investigations, entrepreneurial activities, a discussion and debate.

A visit to Nan Chiau Primary School, for example, finds 4th- and 5th-graders eagerly displaying the science projects they have designed and conducted in an “experience/investigate/create” cycle that is repeated throughout the year. Students are delighted to show visitors their “Innovation Walk,” displaying student-developed projects from many subject areas along a long corridor.

The school brochure describing its “Curriculum Innovations” notes that “Traditional teaching . . . with a focus on rote-learning, contributes as one of the main reasons for unmotivated students. . . . Nan Chiau Primary School has adopted an active learning model that leverages experiential learning [which] allows students to experience the lesson, investigate, and create new knowledge.” Students study plants, animals, and insects in the school’s eco-garden; they run their own recycling center; they write and edit scripts for the Internet radio program they produce; and they use handheld computers to play games and create mathematical models that develop their quantitative abilities.

In a 4th-grade language arts lesson, I watched as students completed brief essays analyzing an aspect of a piece of literature they had just read. They then called up another student’s essay on their computer and wrote a response and critique to their peer. As they worked intensely at their tables of four, periodically sharing their idea with one another and getting feedback, the teacher called up all of the essays on her own computer to carefully choose those she would use in a few moments as models for a brief lesson on both the critical thinking students were developing and elements of their written expression. After seeing and discussing work displayed on the classroom projector, students would have the opportunity to work further on their analyses, with the benefit of insights into other students’ efforts. The use of self- and peer assessments, along with active engagement in creating their own products, is one of the many ways the school seeks to “empower pupils to take ownership of their
learning so they may grow into independent, inquisitive, life-long learners, confident of managing changes in the future.” Teachers, meanwhile, engage in action research, sponsored by the government, to continually improve their teaching.

Certainly there are schools that look like this in the United States, but they are not the norm. What distinguishes systems like Singapore’s is that this quality of education—aimed intently at empowering students to use their knowledge in inventive ways—is replicated throughout the entire nation of 4 million—a jurisdiction with a population about the size of Kentucky, the median U.S. state. Furthermore, Singapore is not alone. The pace at which many nations in Asia and Europe are pouring resources into forward-looking education systems that educate all of their citizens to much higher levels is astonishing. And the growing gap between the United States and these nations—particularly in our most underfunded schools—is equally dramatic.

Contrast the above picture of a typical Singaporean school with the description below of a California school, from a lawsuit filed in 2002 on behalf of low-income students of color in schools like it throughout the state, nearly 50 years after Brown v. Board of Education:

At Luther Burbank, students cannot take textbooks home for homework in any core subject because their teachers have enough textbooks for use in class only. . . . For homework, students must take home photocopied pages, with no accompanying text for guidance or reference, when and if their teachers have enough paper to use to make homework copies. . . . Luther Burbank is infested with vermin and roaches and students routinely see mice in their classrooms. One dead rodent has remained, decomposing, in a corner in the gymnasium since the beginning of the school year. The school library is rarely open, has no librarian, and has not recently been updated. The latest version of the encyclopedia in the library was published in approximately 1988. Luther Burbank classrooms do not have computers. Computer instruction and research skills are not, therefore, part of Luther Burbank students’ regular instruction. The school no longer offers any art classes for budgetary reasons. . . . Two of the three bathrooms at Luther Burbank are locked all day, every day. . . . Students have urinated or defecated on themselves at school because they could not get into an unlocked bathroom. . . . When the bathrooms are not locked, they often lack toilet paper, soap, and paper towels, and the toilets frequently are clogged and overflowing. . . . Ceiling tiles are missing and cracked in the school gym, and school children are afraid to play games in the gym because they worry that more ceiling tiles will fall on them during their games. . . . The school has no air conditioning. On hot days classroom temperatures climb into the 90s. The school heating system does not work well. In winter, children often wear coats, hats, and gloves during class to keep warm. . . . Eleven of the 35 teachers at Luther Burbank have not yet obtained regular, nonemergency teaching credentials, and 17 of the 35 teachers only began teaching at Luther Burbank this school year.
Under these kinds of circumstances, it is impossible even to begin to talk about developing the deep knowledge and complex skills required of young people in today's and tomorrow's society. If Maslow's hierarchy of needs were applied to schools, this kind of institution would be at the basic survival level, lacking the rudiments needed to begin to focus on the quality of learning and teaching or the development of higher-order thinking and performance skills.

Of course, one could argue that California is in many ways a worst case, as the state has allowed its school funding base to decline continuously as the result of the Proposition 13 property tax rollback passed 20 years before this lawsuit was filed. But far from being an anomaly, this school in San Francisco represents a growing number of "apartheid" schools across the United States—schools that serve racial/ethnic minority students exclusively, where political clout is nonexistent and resources are extraordinarily impoverished. Although the terrible conditions at Luther Burbank are also not the norm for U.S. schools, they represent an unconscionable share of the total, and many other urban schools are just a step or two away from these totally dysfunctional conditions.

Although many U.S. educators and civil rights advocates have fought for higher-quality and more equitable education over many years—in battles for desegregation, school finance reform, and equitable treatment of students within schools—progress has been stymied in many states over the last 2 decades as segregation has worsened, and disparities have grown. While students in the highest-achieving states and districts in the United States do as well as those in high-achieving nations elsewhere, it is our continuing comfort with profound inequality that is the Achilles heel of American education.

HOW AMERICA IS LOSING GROUND

These disparities have come to appear inevitable in the United States, however, they are not the norm in developed nations around the world, which fund their education systems centrally and equally, with additional resources often going to the schools where students' needs are greater. As I describe later, the more equitable investments made by high-achieving nations are also more steady and more focused on critical elements of the system: the quality of teachers and teaching, the development of curriculum and assessments that encourage ambitious learning by both students and teachers, and the design of schools as learning organizations that support continuous reflection and improvement. With the exception of a few states that have had enlightened long-term leadership, the United States, by contrast, has failed to maintain focused investments in a stable, well-prepared teaching force; has allowed the direction of learning to be whipsawed by unproductive "curriculum wars"; and has spent mil-
Lions creating innovative schools that, although promising, remain at the margins of a system that has not been redesigned to support a 21st-century schooling enterprise.

**Lagging Achievement**

The results have been that the United States is standing still while more focused nations move rapidly ahead. This inertia is not due to a lack of hand-wringing or high-blown rhetoric. In 1983, *A Nation at Risk* decried a "rising tide of mediocrity" in education and called for sweeping reforms. In 1989, President George H.W. Bush and the 50 governors announced a set of national goals that included ranking first in the world in mathematics and science by the year 2000. However, by 2006, on the most recent international assessments conducted by the Program in International Student Assessment (PISA), the United States ranked 21st of 30 countries in the Organization for Economic Cooperation and Development (OECD) in science, and 25th of 30 in mathematics—a drop in both raw scores and rankings from 3 years earlier (see Figure 1.1). When non-OECD members from Eastern Europe and Asia are added to the list, the U.S. rankings drop to 29th out of 40 developed countries in science, sandwiched between Latvia and Lithuania, and 35th out of 40 in mathematics—between Azerbaijan and Croatia (see Table 1.1 on next page).

**Figure 1.1. U.S. PISA Scores, 2003 and 2006.**

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Importantly, the PISA assessments require more advanced analysis and knowledge use than most U.S. tests, going beyond the question “Did students learn specific facts?” to ask, “What can students do with what they have learned?” PISA defines literacy in mathematics, science, and reading as students’ ability to apply what they know to new problems. It is focused on the kind of learning for transfer that is increasingly emphasized in other nations’ curriculum and assessment systems, but often discouraged by the kind of textbooks and testing most often used in the United States. Indeed, U.S. students fall furthest behind on PISA tasks that require complex problem solving.

Inequality has an enormous influence on U.S. performance. As Figure 1.2 shows, the distance between the average PISA scale score for Asian and White students, on the one hand, and African American and Hispanic students, on the other, is equal to the distance between the U.S. average and that of the highest-scoring countries. Indeed, White and Asian students in the United States score above the OECD average in each subject area, but African American and Hispanic students score so much lower that the national average plummets to the bottom tier of the rankings.

Of nations participating in PISA, the United States is among those where two students of different socioeconomic backgrounds have the largest difference

Figure 1.2. U.S. PISA Results by Subgroup, Compared to OECD Average, 2003.
in expected scores. On this measure of equity, the United States ranked 45th out of 55 countries, just above Brazil and Mexico. Thus, the United States’s poor standing is substantially a product of unequal access for underserved students of color to the kind of intellectually challenging learning measured on these international assessments.

International studies continue to confirm that the U.S. educational system is also one of the most unequal in terms of inputs. In contrast to European and Asian nations that fund schools centrally and equally, the wealthiest school districts in the United States spend nearly 10 times more than the poorest, and spending ratios of 3 to 1 are common within states. These disparities reinforce the wide inequalities in income among families, with the greatest resources being spent on children from the wealthiest communities and the fewest on the children of the poor, especially in high-minority communities. This creates huge inequalities in educational outcomes that ultimately weaken the very fabric of our nation.

It is worth noting that our poor and declining standing in mathematics and science also results from the lack of sustained, serious attention to improving teaching in these areas, where shortages of skilled teachers have been recurrent since the 1950s and where struggles over the curriculum have caused giant pendulum swings in classroom tactics over the same period of time. With teacher salaries typically lagging those for math and science careers by 40% overall and by more in low-wealth districts, coupled with meager investments in teacher preparation and few incentives for entering teaching, the nation has repeatedly created avoidable shortages that have undermined progress.

Meanwhile, in the wars between “new math”—aimed at mathematical reasoning, communication, and problem solving—and a “back to the basics” approach—favoring the use of memorization and algorithms for computation—political forces have repeatedly pushed most mathematics teaching in the United States back to drill-and-practice methods at odds with what research shows are the most effective strategies for developing high levels of mathematical competence. Implemented by a disproportionate number of teachers without the combination of pedagogical training and content knowledge needed for highly skillful teaching, these decisions have created a math-phobic nation that has consistently failed to produce enough people interested and skilled in quantitative fields to fill the growing demands for these abilities.

The algorithmic methods found in most American classrooms are also at odds with what higher-achieving nations do. Although Asian nations, in particular, have had a reputation for fostering rote learning, close studies of mathematics teaching in countries such as Japan, China, and Singapore reveal instead a robust and disciplined approach to teaching mathematical reasoning and complex problem solving where knowledge is continually applied to real-world problems and students are asked
to go beyond routines to use mathematics flexibly in new situations. Furthermore, high-achieving nations teach about half as many topics each year as American schools do, treating them more deeply, with greater opportunity to work on a range of solution strategies and to engage students in applying what they are learning.

Scholars of teaching, such as James Stigler of UCLA, have shown how teachers in countries like Japan and China will often pose a single well-chosen problem to students, contextualized in a real-world situation, which they will spend the entire class lesson reasoning through together. Students will individually and collectively develop and present a variety of potential solutions for class discussion and further evaluation until everyone understands the concept from multiple perspectives. At the end of this process, the students may derive a formula or set of principles to characterize what they have learned, rather than having blindly applied a set of rules learned by rote to a group of problems they never truly understood. As students learn more deeply, they are able to build a more solid foundation for their later learning.

Interestingly, the United States ranks better in reading, where the PIRLS (Program in International Reading and Literacy Studies) assessments showed American fourth graders performing above the international average in 2006, ranked 18th out of 40 nations. This relatively better showing, even given a slight decline in performance between 2001 and 2006, may be linked to the substantial investments in improving the preparation of teachers to teach reading that occurred during the 1990s. During that time, federal, state, and local investments in professional development for literacy grew, new models of teacher support and coaching were developed, and much higher standards for new teachers' reading preparation were established for teacher education and licensing in many states.

Although reading curricula have also been disrupted by recurrent battles between reading for comprehension and an emphasis on phonics, the expertise developed in this field has led most states to a balanced approach that recognizes that good teachers use a range of strategies supporting both decoding and comprehension, as they are appropriate to the needs of students. Although there are still unfortunate battles over curriculum in some places and skirmishes over whether all teachers need training to teach reading, the relatively greater investments in professional development for teaching reading mean that, in most places, practice has improved since the 1980s, and students learn more. This suggests that when we are organized about building stronger teaching for more students, it can be done.

In this field, as others, however, constant progress has been difficult to maintain. For example, after the passage of No Child Left Behind (NCLB) in 2002, some well-researched reading programs were sidelined as the administration of the Reading First initiative required districts receiving federal funds to adopt specific commercial programs and abandon other approaches such as Reading Recovery, Success for
All, and integrated literacy approaches organized around trade books and writing. While the adopted programs brought structured reading approaches to many communities that had previously lacked coherence, and improved decoding skills in early grades in a number of districts, they were also sometimes less successful than the previously used programs, especially for developing deeper comprehension at acquiring academic literacy in the content areas, key skills needed for meaningful reading in later grades. A federal evaluation eventually found that the Reading First initiative had no effect on elementary students’ reading comprehension, although improved decoding in the first grade.20 In the years following the passage of NCLB while reading scores improved somewhat at the 4th-grade level on NAEP (though at a slower pace than in the 1990s), they declined at the 8th-grade level and on international tests like PIRLS, suggesting the trade-off that might have resulted from the government’s prescriptions. Reading First, in its original form, was ended, and new program will offer a broader range of successful program models.

Such U-turns in education policy and practice are not unusual in U.S. education. Local, state, and, sometimes, federal policies frequently force schools to change courses based on political considerations rather than strong research about effective practice. In the long run, the fact that these battles must be continually fought means that we make less headway on student learning than we could and should—and the student most harmed are the most vulnerable students in urban and poor rural schools where the political currents are strongest and changes of course most frequent.

**Stagnating Educational Attainment**

We must also be concerned about lagging educational attainment. In the past, Americans have had a more democratically accessible education system than other nations, making it possible for more young people to complete high school and go to college. This, too, has changed dramatically. As other countries have been pouring resources into education, both their achievement and graduation rates have been climbing for all of their students, including recent immigrants and historically minorities. Meanwhile, the current generation of young Americans may be the first to be less well educated and less upwardly mobile than the one before.

Many of the top-scoring nations—including nations that were previously low-achieving—now graduate more than 90% of their students from high school showing tremendous increases from 20 years ago. During the same period, U.S. graduation rates have been virtually stagnant, and now fall significantly below those of many other countries. (see Figure 1.3).25 While the demands for an educated workforce increase, only about 69% of U.S. high school students graduated within 4 years with a standard diploma in 2000, down from 77% in 1969.24 Including
Figure 1.3. Percentage of High School Graduates to the Population at the Typical Age of Graduation (Unduplicated Count).

Source: OECD, 2008.
students who receive nonstandard diplomas (GEDs and other kinds of certificate) increases U.S. graduation rates to about 75%; however, this is still far below the rate of most advanced nations and leaves many young people without access to the economy or a living wage.

Many nations have also created higher education systems that are quickly becoming equally productive. Whereas the United States was an unchallenged first in the world in higher education participation, it had slipped to 14th by 2007 a college participation for our young people was declining.\textsuperscript{28} and to 16th by 2008.\textsuperscript{2} Although about 60% of U.S. high school graduates go off to college, only about half of these are well enough prepared educationally and well enough supported financially to graduate with a degree—far too few for the knowledge economy in which we now operate. In the end, about 35% of an age cohort in the United States gains a college degree, as compared to about 50% in European countries and over 60% in Korea.\textsuperscript{37} Other countries in Southeast Asia are also rapidly increasing the proportion of their citizens attending college by expanding higher education institutions at home and subsidizing their studies abroad.

For students of color in the United States, the pipeline leaks more profusely at every juncture. Only about 17% of African American young people between the ages of 25 and 29—and only 11% of Hispanic youth—had earned a college degree in 2005, as compared to 34% of White youth in the same age bracket.\textsuperscript{3} Although these young people of color will be a majority of public school student by 2025, investments in their education remain highly unequal and inadequate to meet today’s demands for the kind of learning needed in the labor market. The schools they attend are both more segregated than they were 25 years ago\textsuperscript{39} and less adequately resourced.\textsuperscript{40} International studies confirm that the U.S. educational system not only lags most other industrialized countries in academic achievement by high school, but it is also allocates more unequal inputs and produces more unequal outcomes than its peer nations.\textsuperscript{41}

The implications of these trends are important for national economies. A recent OECD report found that for every year the average schooling level of the population is raised, there is a corresponding increase of 3.7% in long-term economic growth.\textsuperscript{42} a statistic worthy of note while the United States is going backward in educating many of its citizens, and most of the rest of the world is moving forward.

This is partly because state contributions to higher education have declined causing increases in tuition, as the federal commitment to financial aid also dipped. In 1979, for example, the maximum federal Pell Grant award covered about 75% of the cost of a 4-year college education, but 30 years later, the share had dropped to 33% of college costs.\textsuperscript{43} The situation is growing worse. In 2009, as a full-fledged fiscal crisis set in across the nation, state after state announced large cutbacks in higher
education. In California alone, the state university system has cut more than 20,000 seats, while the number of young people prepared for college and needed for high-technology jobs increases steadily.

Our great university system is now increasingly the training ground for students from other countries, who, unlike American students, are fully subsidized by their governments. A recent report of the National Science Foundation notes that the pipeline into America’s Ph.D. programs is now dominated by graduates of Chinese universities. In 2000, for the first time ever, the top producers of students coming into U.S. doctoral programs were Tsinghua and Beijing universities, with the University of California at Berkeley coming in third. The two Chinese universities nearly quadrupled the number of students they sent to U.S. doctoral programs over the course of a decade. Of the top 10 sources of doctoral students, only six are U.S. schools, and of all U.S. doctoral recipients in science and engineering, more than one-third come from other countries.

This continues a long-standing decline in the number of Americans pursuing advanced degrees in science and engineering, even as the proportion of jobs requiring such advanced training increases. As Intel’s director of research, Andrew Chien, commented, advanced degrees in these fields “hold the keys to the kingdom in terms of unleashing what is possible in the world and driving change.” The good news, he notes, is that U.S. universities are still among the top in the world and a magnet for students from overseas, many of whom say they would like to stay in the United States and work here on visas. The bad news is that both these visas and U.S. citizens trained for these high-tech jobs are in short supply.

The results of the lack of investment in American youth are highly visible in my home community of in the heart of Silicon Valley, where shortages of individuals adequately trained for the growing number of high-tech science and engineering jobs are a source of grave concern. As just one example, on April 4, 2007, a San Jose Mercury News headline screamed: “H-1B demand exceeds limit.” The article noted that, on the very first day that companies were eligible to apply for H-1B visas for high-tech workers, a record 150,000 applications had been filed for the only 65,000 visas available for all of 2008. Anxiety was rampant among technology companies, which would have to participate in a lottery to determine who would receive these visas designated for engineers, computer programmers, and other technically skilled workers.

Meanwhile, all around Silicon Valley, poorly educated California children are dropping out of school in increasing numbers—recent statistics show the on-time graduation rate having declined to about 67% in 2006—and the state’s prisons are bursting at the seams, filled largely with dropouts and functionally illiterate young men who were the victims of the state’s declining investments in education in the years since a tax cap caused disinvestments in public education.
HOW POLICY CAN MATTER

These declines are not inevitable. We have made strong headway on educational achievement in the past and can do so again. At this moment in history, it is easy to forget that during the years following Brown v. Board of Education, when desegregation and school finance reform efforts were launched, and when the Great Society's War on Poverty increased investments in urban and poor rural schools, substantial gains were made in equalizing both educational inputs and outcomes. Gaps in school spending access to qualified teachers, and access to higher education were smaller in the mid- to late 1970s than they had been before and, in many states, than they have been since.

Driven by the belief that equal educational opportunity was a national priority, the Elementary and Secondary Education Act of 1965 targeted resources to communities with the most need, recognizing that where a child grows up should not determine where he or she ends up. Employment and welfare supports reduced childhood poverty to levels about 60% of what they are today, and greatly improved children's access to health care. Congress then enacted the Education for All Handicapped Children Act, which opened educational doors to children with special education needs, and the Elementary and Secondary Assistance Act, which supported desegregation, the development of magnet schools, and other strategies to improve urban and poor rural schools. These efforts to level the playing field for children were supported by intensive investments in bringing and keeping talented individuals in teaching, improving teacher education, and investing in research and development.

These investments began to pay off in measurable ways. By the mid-1970s, urban schools spent as much as suburban schools, and paid their teachers as well; perennial teacher shortages had nearly ended; and gaps in educational attainment had closed substantially. Federally funded curriculum investments transformed teaching in many schools. Innovative schools flourished, especially in the cities.

Improvements in educational achievement for students of color followed. In reading, large gains in Black students’ performance throughout the 1970s and early 1980s reduced the achievement gap considerably, cutting it nearly in half in just 15 years (see Figure 1.4). The achievement gap in mathematics also narrowed sharply between 1973 and 1986. Financial aid for higher education was sharply increased, especially for need-based scholarships and loans. For a brief period in the mid-1970s, Black and Hispanic students were attending college at rates comparable to those of Whites, the only time this has happened before or since (see Figure 1.5).

However, this optimistic vision of equal and expanding educational opportunity, along with the gains from the “Great Society” programs, was later pushed back. Most targeted federal programs supporting investments in college access and K–12 schools in urban and poor rural areas were reduced or eliminated during the Reagan administration in the 1980s. Meanwhile, childhood poverty rates, homelessness,
**Figure 1.4.** Differences in Black and White Students' Reading Scores on the National Assessment of Educational Progress (NAEP), 1971–2004.


**Figure 1.5.** College Enrollment Rates as a Percentage of High School Graduates, by Race/Ethnicity (1972–2005).

Source: NCES, 2006
and lack of access to health care also grew with cuts in other federal programs supporting housing subsidies, health care, and child welfare.

As states picked up more and more of the responsibility for these programs, and state school funding failed to keep pace, urban and poor rural schools fell behind their counterparts in resources. Over time, they began to experience growing teacher shortages and increasingly poor teaching and learning conditions. Most of the programs supporting educational innovation and investment in high-need communities were cut when the federal share of funding shrank from 12% to 6% during the 1980s. The situation in many urban schools deteriorated over the decade. Drops in real per pupil expenditures accompanied tax cuts and growing enrollments. Meanwhile, student needs grew with immigration, concentrated poverty and homelessness, and increased numbers of students requiring second-language instruction and special educational services.

By 1991, when Jonathan Kozol wrote Savage Inequalities, stark differences had emerged between segregated urban schools and their suburban counterparts, which generally spent twice as much. This included places like Goudy Elementary school, which served an African American student population in Chicago, using 15-year-old textbooks in which Richard Nixon is still president,” and “no science bs, no art or music teachers . . . [and] two working bathrooms for some 700 children,” in contrast with schools in the neighboring town of New Trier (more than 98% White), where students had access to “superior labs . . . up-to-date technology . . seven gyms [and] an Olympic pool.”

By the end of the 1980s, the achievement gap had begun to grow again. Although it has fluctuated from year to year, after 1988 the reading achievement gap is sharply again at all grade levels, and, except for a recent improvement for 9-year-olds, has never been as narrow since. In 2005, the average Black or Hispanic twelfth grader was reading at the level of the average White eighth grader (see Figure 1.6). The gap in mathematics achievement also widened for Blacks and Latinos after 1988. Although there has been progress since the mid-1990s at the 4th-grade level, that has remained a yawning chasm for students at the 8th- and 12th-grade levels.

The investments in the education of students of color that characterized the desegregation and finance reforms of the 1960s and 1970s, have never been re-established in the years since. Ironically, had the rate of progress achieved in 1970s and early 1980s been continued, the achievement gap would have been closed by the beginning of the 21st century. Unfortunately, that did not occur. The nations that are now high-achieving and equitable built on the progressive reforms they launched in the 1970s (more on this in Chapter 6), the United States and much of this progress in the Reagan years. Conservatives introduced a new wave of reform focused on outcomes rather than inputs—that is, high-stakes testing
without investing—that drove most policy initiatives. Although some federal support to high-need schools and districts was restored during the 1990s, it was not enough to fully recoup the earlier losses, and after 2000, inequality grew once again.

By 2003, for example, more than a decade after Savage Inequalities was written, school spending in New Trier, at nearly $15,000 per student, still far exceeded the $8,500 per student available in Chicago for a population with many more special needs. Chicago’s smaller budget has to stretch to provide food and health care for students, before- and afterschool programs so that children will not be unsupervised when their parents must work long hours, extra assistance for large numbers of new English language learners and students who come to school without yet having the basic vocabulary and world knowledge other children have acquired, and more resources to ensure learning progress for students who receive fewer assist at home.

The added instructional costs that are concentrated in segregated high-poverty schools—the need for language supports, more extensive special education services, remedial education, constant training and supervision of new teachers because of
rapid turnover, social work and counseling for students from severely troubled families, health emergencies, frequent moves and school transfers in mid-year, and other problems—mean that equal dollars cannot produce equal opportunities. Perversely, our society not only constructs substantial income inequality with fewer social supports for poor children, but it also funds the schools these children attend much more inadequately.

Nationwide, most cities now spend far less than what their much wealthier suburbs can spend. The fact that the suburban district of Lower Merion, Pennsylvania, can spend $17,000 compared to Philadelphia’s $9,000, and Manhasset, New York, can spend $22,000 compared to New York City’s $11,000,51 means that they offer higher salaries and better teaching conditions to attract the best-qualified and most experienced teachers. Higher-spending districts also have smaller classes, more specialists, and greater instructional resources, as well as better facilities; more up-to-date texts, libraries, computers, and equipment; and a wider range of high-quality course offerings. Thus, the continuing segregation of neighborhoods and communities intersects with the inequities created by property tax revenues, funding formulas, and school administrative practices to create substantial differences in the education resources made available in communities serving White as compared to “minority” children. And the students least likely to encounter a wide array of educational resources at home are also least likely to encounter them at school.52

Recent analyses of data prepared for school equity cases in more than 20 states have found that on every tangible measure—from qualified teachers and class sizes to textbooks, computers, facilities, and curriculum offerings—schools serving larger numbers of students of color have significantly fewer resources than schools serving more affluent White students.53 Many such schools are so severely overcrowded that they run a multi-track schedule offering a shortened school day and school year; lack basic textbooks and materials, do not offer the courses students would need to be eligible for college, and are staffed by a parade of untrained, inexperienced, and temporary teachers.54

Clearly, students do not experience a right to learn under these circumstances. This is not a new problem, of course. Throughout 200 years of slavery, a century of court-sanctioned discrimination based on race, and a half-century of different access to education by race, class, language background, and geographical location, we have become accustomed to educational inequality. While politicians and pundits bemoan the dramatically unequal educational outcomes announced each year in headlines focused on the achievement gap, we often behave as a nation, as though we are unaware of the equally substantial inequalities in access to educational opportunity that occur from preschool through elementary and secondary education, into college and beyond. Indeed, most ordinary Americans are unaware of these disparities, believing that in the United States of America, school:
must be equitably funded, and that the schools they have seen their children attend are the norm everywhere else.

But the children who experience the downside of these inequalities notice. As one New York City 16-year-old observed of his school, where holes in ceilings exposed rusty pipes and water poured in on rainy days, in comparison with others:

You can understand things better when you go among the wealthy. You look around you at their school, although it’s impolite to do that, and you take a deep breath at the sight of all those beautiful surroundings. Then you come back home and see that these are things you do not have. You think of the difference.55

His classmate added:

If you … put white children in this building in our place, this school would start to shine. No question. The parents would say: “This building sucks. It’s ugly. Fix it up.” They’d fix it fast—no question. … People on the outside may think that we don’t know what it is like for other students, but we visit other schools and we have eyes and we have brains. You cannot hide the differences. You see it and compare.56

The disparities in physical facilities are just the tip of the iceberg. Measurable and compounded inequalities leave most students of color without many of the basic tools for learning. It all adds up.

THE LEGACY OF EDUCATIONAL INEQUALITY

The result of these trends is that, while the United States must fill many of its high-tech jobs with individuals educated overseas, more and more of its own citizens are unemployable and relegated to the welfare or prison systems, representing enormous personal tragedy, as well as a drain on the nation’s economy and social well-being, rather than a contribution to our national welfare. With a more educationally demanding economy, the effects of dropping out are worse than they have ever been before. In the years from 2001 to 2006, a 21-year-old high school dropout who was Black had less than a one-in-four chance of being employed full-time, and the odds for his White counterpart were less than 45%.57 Even recent high school graduates struggle to find steady jobs. Among African American high school graduates not enrolled in college at 21, only 46% were employed full-time, as compared to 59% of White graduates at 21. Nearly one-fourth of high school graduates not in college were not employed at all. Those who do not succeed in school are increasingly becoming part of a growing underclass, cut off from productive engagement in society.
Because the economy can no longer absorb many unskilled workers at decent wages, lack of education is increasingly linked to crime and welfare dependency. Women who have not finished high school are much more likely than others to be on welfare, while men are much more likely to be in prison. Most inmates are high school dropouts, and more than half of the adult prison population is functionally illiterate—with literacy skills below those required by the labor market. Nearly 40% of adjudicated juvenile delinquents have treatable learning disabilities that were often undiagnosed and unaddressed in the schools. Some states are said to predict the number of prison beds they will need in a decade based on 3rd-grade reading scores.

This is substantially, then, an educational problem associated with inadequate access to the kinds of teachers and other resources that could enable young people to gain the skills that would enable them to become gainfully employed. States that would not spend $10,000 a year to ensure adequate education for young children of color spend over $30,000 a year to keep them in jail. The strong relationship between under-education, unemployment, and incarceration creates a vicious cycle, as lack of adequate investment in education increases the need for prisons, which now compete with the funding available for education.

Since the 1980s, national investments have tipped heavily toward incarceration rather than education. During the 1980s, incarceration rates doubled, and by 1993, there were more African American citizens on probation, in jail, in prison, or on parole (1,985,000) than there were in college (1,412,000). Since then, prison enrollment has continued to climb. With 1 out of every 100 Americans—more than 2.3 million—now behind bars, the United States imprisons far more people—both proportionately and absolutely—than any country in the world, including China. Representing only 5% of the world’s population, America has 25% of the world’s inmates.

States now spend about $44 billion annually on corrections. As the number of prisoners has quadrupled since 1980, state budgets for corrections grew by over 900%, three times faster than funds for education (see Figure 1.7). These rising costs increasingly cut into resources for schools. Between 1987 and 2007, state spending on higher education increased only 21% in real dollar terms while spending on corrections grew by 127%. By 2007, five states were spending as much as or more on corrections than they spent on public colleges and universities.

Ironically, many states also find prison costs eating into the funds they want to spend on early childhood education, an investment that has been found to dramatically increase graduation rates and reduce participation in juvenile and adult crime. As Michigan governor Jennifer Granholm noted, “It’s not good public policy to take all of these taxpayer dollars at a very tough time and invest them in the prison system when we ought to be investing in the things that are going to transform the economy, like education.”
So the United States finds itself in a catch-22 situation from which it cannot long sustain the healthy democracy and high-tech economy it needs to create a strong standard of living for most citizens. The failure of many states to invest adequately in the education of low-income children and new immigrants, to provide them with effective teachers and the necessary curriculum and learning materials, results in growing numbers leaving school without the skills needed to become a part of the economy. While the highest-achieving nations are making steep, strategically smart investments in education, the United States is squandering much of its human capital.

The implications of these social choices for our national well-being are enormous. Dropouts cost the country at least $200 billion a year in lost wages and taxes, costs for social services, and crime. With only three potential workers for every one person on Social Security in 2020 (as compared to 20 workers for every retiree in 1950), having one-third on the nonproductive side of the equation will undermine the social compact on which the nation depends.

The United States must shift course if it is to survive and prosper as a First World nation in the 21st century. We can ill afford to maintain the structural inequalities in access to knowledge and resources that produce persistent and profound barriers to educational opportunity for large numbers of our citizens. There is no doubt that the long-term survival and success of individuals and societies increasingly depend on a top-flight education system. Our future will be increasingly determined by our capacity and our will to educate all children well—a challenge
we have very little time to meet if the United States is not to enact the modest
equivalent of the fall of Rome.

WHAT MUST BE DONE?

While this picture of the most neglected American schools is dire, there are many
places to look for hope and insight. Some states and districts have made significa-
cent strides at educating both rich and poor children well. Some states have created
comprehensive reforms that have raised performance and closed achievement gaps. An
course, entire nations have developed strong and equitable education systems
often from very weak beginnings. These places share a number of features needed
a system of education that can routinely educate all children well, including

- Secure housing, food, and health care, so that children can come to school
  ready to learn each day
- Supportive early learning environments
- Equitably funded schools which provide equitable access to high-quality
  teaching
- Well-prepared and well-supported teachers and leaders
- Standards, curriculum, and assessments focused on 21st-century learning goal
- Schools organized for in-depth student and teacher learning

Key to their success has been the creation of a teaching and learning system that
provides excellent education to all students. Such a system not only prepares
teachers and school leaders well for the challenging work they are asked to do, but
ensures that schools are organized to support both student and teacher learning
and that the standards, curriculum, and assessments that guide their work encour-
the kind of knowledge and abilities needed in the 21st century.

In what follows, I discuss how we got where we are and what we need
do—in practice and in policy—to create a system that offers excellent and equi-
table education to all children in America. In Chapter 2, I outline how the
opportunity gap has been constructed in the United States. In Chapters 3 and
4, I discuss the challenges we have faced in pursuing greater educational equi-
ity and quality through standards reform and school finance reform. Chapters 5 and
6 describe how some states and nations have built higher-performing and more
equitable systems from the ground up with strategic investments in reforms that
work. Finally, I discuss how more effective and equitable education can be con-
structed in practice and supported by policy that enables high-quality teach-
(Chapter 7), strong school organizations (Chapter 8), and a supportive poli-
system pointed at the goals that matter most (Chapter 9).