Teachers and the Uncertain American Future

CENTER FOR INNOVATIVE THOUGHT

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"Teaching is not a lost art, but the regard for it is a lost tradition."

Jacques Barzun
Former Provost and Dean of Faculties, Columbia University

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PREFACE

Early in 2005, the College Board established the Center for Innovative Thought to identify challenges to America's educational well-being and suggest strategies for addressing them. By bringing together some of the best minds in education, the College Board hoped the Center could help foster a national passion for education and create an environment in which students enter and succeed in higher education.

Any discussion about current efforts to improve American education must start with the 2002 enactment of the federal No Child Left Behind Act. Wherever one stands on the specifics of that legislation, standards-based reform is here to stay. And both standards and assessments ultimately rest on good teaching. Stronger curricula, access to campus, college success, better assessments, professional development, improving the working life of overburdened school counselors—these are all familiar challenges for the College Board, and each points to the central importance of teachers.

The Center understands that America must make choices about its priorities and its future. But the nation was declared to be "at risk" in 1982, and the fact is that it is still at risk. As this document makes clear, the risk extends well beyond the classroom. It includes challenging social and global trends that are accompanying the aging of America and the entry of the United States into a global economy. The peril is not solely, or even principally, a failure of American schools, but a failure of American vision and leadership.

Although schools alone cannot fix the larger challenges, these problems cannot be addressed without a world-class school system. And here the Center focuses on teaching: A problem of epic proportions looms on the horizon. It has yet to register fully with the nation. Amazingly, 46 percent of the new teachers who enter elementary and secondary schools will leave the classroom within five years. Nearly half of the current teachers have already served for 20 years or more and may be looking at retirement. Where will we find replacements? How will we pay for them? What does the future for the teaching profession look like?

This report examines these questions. It suggests we need more support of, and commitment to, teachers. And it argues that the changes in teacher demographics provide an opportunity to do something dramatic about teacher quality and the esteem in which the profession is held.

On behalf of the College Board, I thank the Center and its National Advisory Panel for their contributions to this essential work and to the teachers who make a difference in our classrooms.

Gaston Caperton
President, The College Board

"Many of the best and brightest college graduates continue to choose careers such as engineering and computer animation, where 22-year-olds can earn starting salaries of $40,000—a salary teachers in large metropolitan areas earn only after 10 years of work. Until the applicant pool is enlarged to attract more talented individuals from more lucrative fields, the most critical job in America will remain in critical condition."

Brian Crosby, National Board Certified High School English Teacher and author of *The $100,000 Teacher: A Solution to America's Declining Public School System*

A perfect storm is forming around the world. It is aimed squarely at the United States. If allowed to reach these shores unimpeded, this economic storm will devastate communities all over the country. It will do so not because we did not understand its potential but because, despite repeated warnings, the nation's citizens and political and business leaders did not maintain the protection that a sound economy and a powerful education system provide. These are trying times. Americans need to respond with alarm and alacrity. Otherwise, the United States and its people are likely to be swamped by a tidal wave of public and private debt; a sea of red ink in federal, state, and local budgets; catastrophic trade imbalances; and the continued flight of jobs abroad in the transnational search for cheap, skilled labor willing to manufacture products for American consumption.

The stakes involved in the decisions Americans make in the next decade are that simple and that direct. Unless we act both promptly and wisely, the United States, just emerging from the "American century," could quickly find its communities submerged in a rising tide of low-wage jobs, leaving the nation economically vulnerable, hard-pressed to maintain even the technologies on which its national security rests.

Those are challenging words, but they are not offered lightly. Recent indicators from the National Academy of Sciences, the Bureau of Labor Statistics, and the American Electronics Association provide troubling evidence to back them up. Among the indicators:

- Since 1980, the national debt has increased eightfold to approximately $8.3 trillion, much of it held by foreign investors, while the health and pension costs of baby-boomer retirements await right around the corner.[1]
- Continued trade deficits (now topping $618 billion) threaten to turn America into a "share-cropper's society" warned investor Warren Buffett last year in his annual report to shareholders of Berkshire Hathaway Inc.[2]
- The American high-technology products trade deficit leaped from $40 billion in 1999 to $96 billion in 2005.[3]

- In the next decade, according to the U.S. Department of Labor, occupations with the greatest job growth will create 6.6 million new low-skill jobs, but only 1.7 million requiring a bachelor's degree or higher.[4] About 22,000 jobs for software engineers will be created annually, but there will be five times as many jobs for janitors and cleaners, waiters and waitresses, and fast-food servers.
- American industrial icons like Ford and General Motors have suffered the indignity of having their debt reduced to junk bond status.[5]
- Of 120 chemical plants being built around the world with a price tag of $1 billion or more, one is in the United States and 50 are in China.[6]
- Transnational companies can hire nine factory workers in Mexico for the cost of one in America and eight professional engineers in India for the cost of one in the United States.[7]
- Meanwhile, fewer than one-third of U.S. fourth-grade and eighth-grade students are "proficient" in mathematics, and U.S. twelfth-graders perform below international averages in tests of general knowledge in mathematics and science.
- University students in South Korea, France, China, Singapore, India, and elsewhere are studying natural science and engineering at rates two to three times greater than American students.[8]

Sobering indicators such as those explain the Center's sense of urgency. Although called together to examine the teaching crisis in the United States, Center members quickly agreed that education is but one of many central challenges facing our country. The nation that was declared to be at risk in 1983 by the National Commission on Excellence in Education is today even more grievously at risk. The peril is not solely, or even principally, the failure of American schools and students to meet world-class standards. It is a larger failure of policy will and leadership vision—a failure to pay attention and think about the consequences as the world around us changed.

In a memorable phrase decades ago, the Anglo-American philosopher Alfred North Whitehead summed up the central importance of education to the national endeavor: "In the conditions of modern life the rule is absolute, the [nation] which does not value trained intelligence is doomed." Whitehead was simply restating what Thomas Jefferson had earlier said: "…the important truths [are] that knowledge is power, knowledge is safety, and knowledge is happiness." The knowledge and skills of our citizens are the most valuable assets as we face the opportunities and challenges of the future.

A New Urgency

We hope to infuse a new urgency into this discussion. An essential new reality has been added to the equation: The world has been remade in less than a generation in ways that many citizens do not fully understand. China is on the verge of becoming a twenty-first-century economic miracle. In the last decade, Europe has adopted a common currency and, despite political ups and downs, is not far from developing into what seemed to be a fantasy a generation ago—the "United States of Europe." The emergence of African, Asian, and Latin American nations as production sites for finished goods is something new in the American experience. And recent analyses indicate that the integration of emerging giants such as China, India, Brazil, and the former Soviet Union into the world economy will nearly double the size of the global labor force.

Even the smallest American communities are profoundly shaped today by economic developments in the far corners of the globe. And we must be ready to accept and respond to the opportunities and challenges.

The Teaching Dimension

Although the quality of our education system is but one pillar of American life, it is a critical one. With No Child Left Behind (NCLB) now in its third year of implementation, we know that standards need to be informed and supported by good teaching. The legislation itself reflects that understanding, with its emphasis on highly qualified teachers in every classroom. The conversations surrounding this legislation give us the opportunity to coalesce around beliefs and hopes shared by all Americans.

It is now apparent that most of our efforts at school reform will come to nothing unless teachers are up to the task. Standards-based reform may be the lever that sets in motion the improvements the United States has sought in its schools for decades. But common sense, parental experience, and the research literature are clear: The most successful school innovations rest on the time, talent, and skill of teachers. These are the people who make everything else possible, including all the other professions. Teachers count. Thousands are doing great work. They are the center of education. And because they are, it is time the American people made a new compact with them.

As Americans examine their education system, two realities stand out: The United States is in trouble without good teachers, and teaching is a profession in crisis. A few features capture the severity of the challenge before us:

- In a nation employing approximately 2.9 million teachers, school districts nationally will have to hire 2 million new teachers in the next decade to account for enrollment increases, and for teacher retirement, turnover, and career change.
- Nearly half the new teachers who enter elementary and secondary classrooms will leave the profession within five years.
- Elementary and secondary school teaching is one of the nation's lowest paid, entry-level professions. Although job security and benefits are attractive, teachers with 5 or even 10 years of experience can still find themselves earning less then their classmates' salaries right out of college.
- Whereas some cultures treat teachers with the respect accorded local religious and learned leaders, teaching in America does not enjoy the status to which it is entitled.
- In the nation's middle schools, more than 20 percent of mathematics teachers and more than 40 percent of physical science teachers are teaching "out of field," a euphemism to describe those without the qualifications they need.
- Inner-city communities and rural areas experience the greatest challenges in finding high-quality teachers for their classrooms.

Obviously the United States can do better. Clearly it must. A new compact between America and its teachers can be defended on educational grounds. It can be justified on grounds of equity. It can be supported by appeals to democratic principles. Equally important, a new compact can be defined as an essential component of the nation's effort to protect and secure its future.

> *"To ensure that teachers are qualified to meet the teaching requirements and the learning needs of the digital age, we must insist on quality preparation for teachers, rigorous accreditation standards, and licensure that meets high standards."*
>
> **National Commission on Teaching and America's Future, 2003**

Teachers represent an enormous workforce in the United States. According to the National Center for Education Statistics (NCES), there are nearly three million American public school teachers, with another 450,000 in private schools. All told, teachers make up 2.7 percent of the U.S. workforce. These figures mean that there are about as many elementary and secondary teachers as there are secretaries and administrative assistants. There are as many teachers as there are employees in retail trade. There are nearly three teachers for every firefighter and public safety officer, nearly three for every engineer, and two for every registered nurse. Teachers are a living and breathing reality in every community in the country, large and small.

Everyone understands the importance of teachers. Although some discussions begin and end by blaming teachers for conditions over which they have no control, several other useful approaches have been put forward.

In his 2006 State of the Union address, President George W. Bush emphasized the central importance of teaching in our national life. He asked Congress to support a new effort to train 70,000 new AP® teachers, the men and women who can help assure measurable improvement in science, mathematics, and foreign languages. Enactment of this proposal will clearly enhance American competitiveness. The president's proposal should be adopted by Congress with dispatch. But the "most critical job in America will remain in critical condition" unless more is done, much more.

President Bush's call for more attention to teachers is a case in point. So too is the NCLB requirement for a highly qualified teacher in every classroom. Some promising alternative preparation programs have been developed to provide teachers for the most challenging schools. Some experiments with modifications to the single-salary schedule have been mounted. And teacher preparation programs have been considerably improved. Since several of these new developments threaten the status quo, they have predictably provoked intense debate about their feasibility and value.

The Center wants to stress that although each of these approaches may have something to recommend it, none of them by themselves guarantee an effective teacher in every classroom in the United States. Acting in the national interest demands that the nation and the profession commit to drastic improvements in teacher quality and the conditions of teaching.

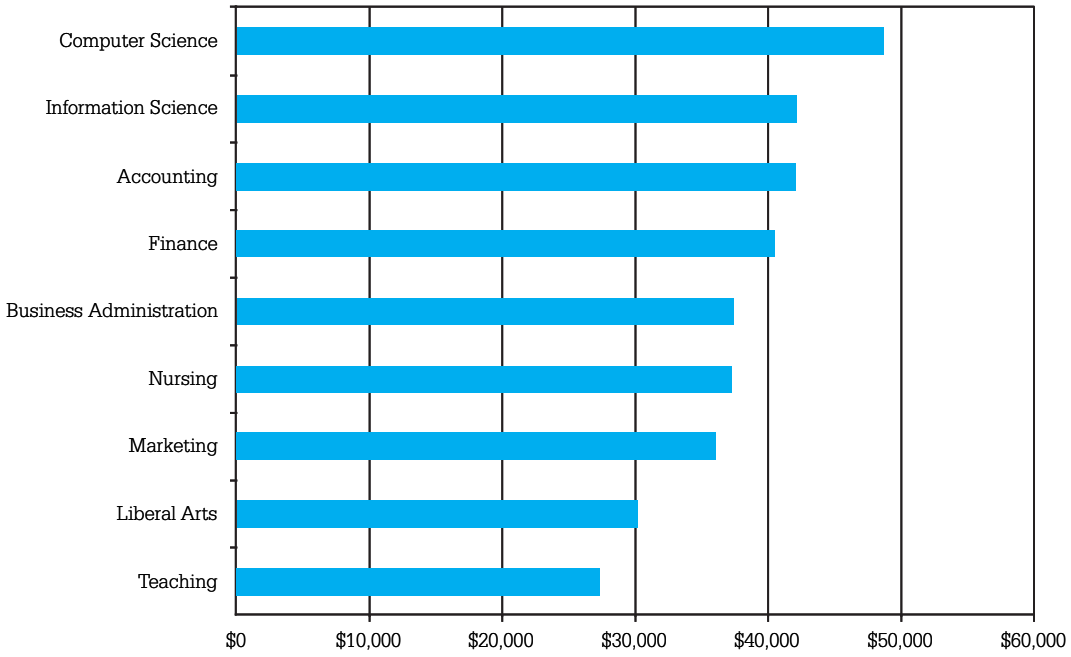
Those improvements require taking up five great challenges:

- inadequate salaries
- unprofessional working conditions
- a crisis in mathematics and science teaching
- lack of diversity in the teaching profession
- rigid pathways into teaching

Inadequate Salaries

It is hard to sugarcoat the obvious. Data from the National Association of Colleges and Employers reveal that, when professions are sorted by starting salaries, teaching ranks at the bottom (see Figure 1). Not to put too fine a point on the data: pointing to teachers' beginning salaries is no way to demonstrate that this society values teaching.

Figure 1: Starting Salaries, 2002-03



Source: NACE & CNN

Nor is the picture greatly improved if average salaries for all teachers, experienced and new, are considered. According to national data, the typical teacher earned less than $46,000 annually in 2002-03, with a high average of about $56,000 in California and a low of less than $32,500 in South Dakota. As the Teaching Commission led by former IBM CEO Louis Gerstner observed in 2004, attracting the best and the brightest into teaching will require "paying them more—a lot more"…because "money matters."

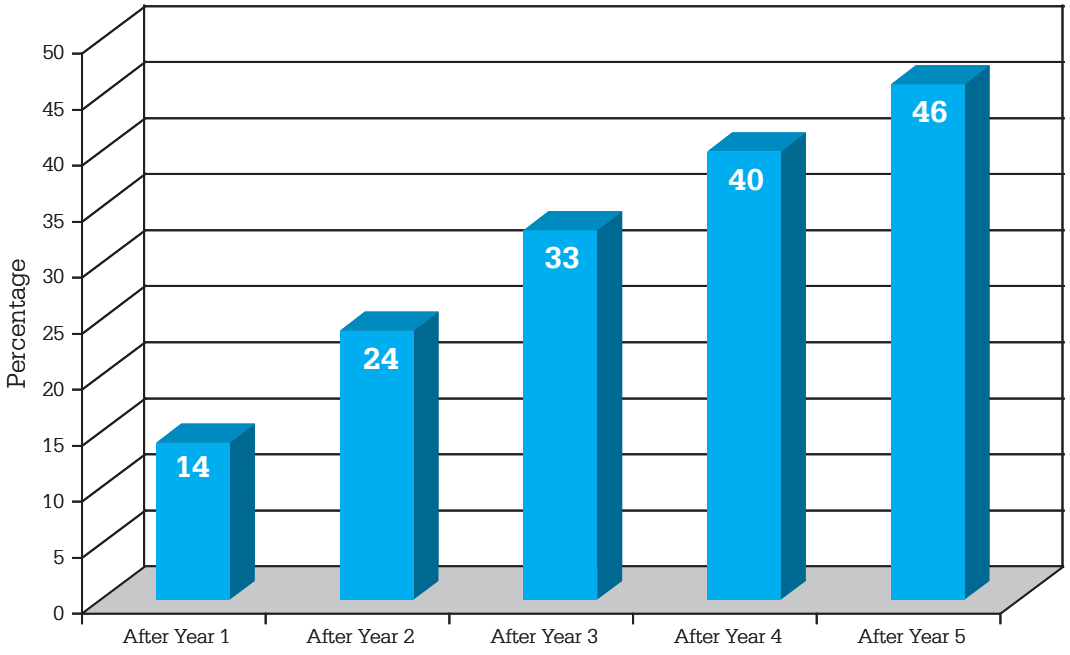
Unprofessional Working Conditions

Teaching is a revolving door, concluded a blue-ribbon commission led by James Hunt, former governor of North Carolina, in 2003. About a third of teachers are in transition into and out

of schools every year—entering, leaving, transferring, retiring, or simply abandoning the field. Beginning-teacher attrition is a chronic problem (see Figure 2).

Fully 14 percent of new teachers leave the field after the first year. Cumulatively, nearly a quarter have left after the second year. At the end of five years, almost half of all new teachers have bid the classroom good-bye. They take with them the public's costly investment in their preparation and their own hard-earned experience in the classroom.

Figure 2: Beginning Teacher Attrition a Chronic Problem



Source: Hunt Commission, 2003

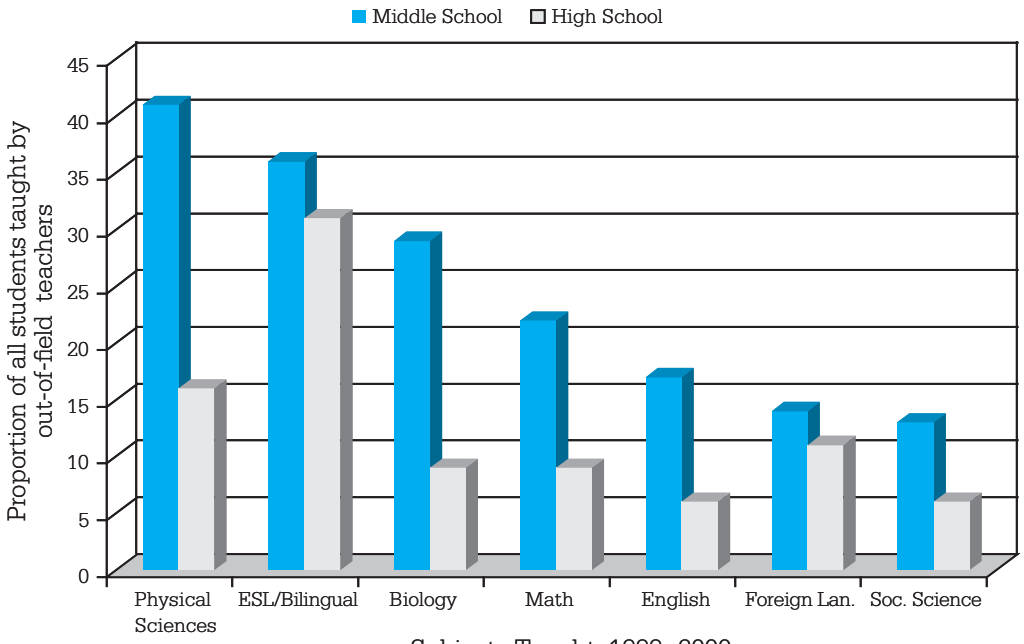
One study in Texas estimated that the total costs involved with teacher turnover are at least 50 percent of the leaving teacher's salary. The proportion might be substantially higher, but it is at least 50 percent per teacher when expenses associated with separation costs (exit interviews and administration), hiring expenditures (advertising, travel, and interviewing), training, and the expense of the new teacher's learning curve are considered.

What accounts for the startling rates of turnover in the early years? Some new teachers discover the classroom is not for them. They change careers. Others leave to raise children and spend time with their families. But in a national survey conducted by the National Center for Education Statistics and a statewide review sponsored by the California State University System, many former teachers report that working conditions explain why they left the classroom. Large proportions in both surveys (in excess of 50 percent) point to bureaucracy, lack of support in the classroom, and poor staff morale as explanations for their decisions to leave. They complain that facilities are poor, that classes are too large, and that the lack of planning time, combined with high workloads, makes effective teaching impossible.

A Crisis in the Teaching of Mathematics and Science

One of the most troubling features of the Center's review was the realization that significant numbers of students at the middle and high school levels are being taught by mathematics and teachers who are "out of field" (see Figure 3).

Figure 3: Many Students Taught by Out-of-Field Teachers



(Source: NCES, 2003)

When NCES says "out of field" it means that these teachers lack a major, a minor, or certification to teach the subject. By the profession's own standards, these teachers are unqualified. The data in Figure 3 are profoundly troubling, perhaps most grievously at the middle school level. (The situation with regard to bilingual education and the teaching of English as a second language is equally disturbing.) Forty percent of middle school students in the physical sciences (including chemistry, geology, and physics) are taught by unqualified teachers, with the proportion in biology approaching 30 percent, and that in math exceeding 20 percent. The comparable figures in high school range between 8 and 15 percent.

How does a nation that has bet its future on innovation and technology tolerate this state of affairs?

The National Academy of Sciences will soon publish *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future*. Prepublication data about the crisis in American math and science preparation are sobering:

- Less than half of those who graduate from U.S. high schools are ready for college-level math and science.
- Although U.S. fourth-graders score well against international competition, they fall near the bottom or dead last by the twelfth grade in mathematics and science, respectively.

- On a recent international assessment of the math problem-solving skills of 15-year-olds, the United States has the smallest percentage of top performers and the largest percentage of low performers compared to the other participating countries.

Permitting this situation to continue threatens to put the United States at a severe competitive disadvantage. Although preliminary announcements of the National Academy of Sciences' findings seriously overstated the American competitive disadvantage in the production of engineers on American campuses, the reality is that India (which is producing almost as many four-year degree holders as the United States) and China (which is producing about twice as many) have put formidable new technical know-how into play on world markets.[9] American technical competence is far ahead by almost any measure. But we could easily lose our edge if we ignore the massive numbers of engineers who are being produced elsewhere in the world.

Meanwhile, labor contracts frequently make it difficult to assign the most experienced (and highly paid) teachers to schools experiencing the greatest challenges. Teacher preferences dictate the assignment of teachers across schools within a district. These preferences are usually honored on the basis of seniority and are backed up by labor contracts. The most senior teachers almost always receive their preference to be assigned to schools with the fewest teaching challenges. The newest and least experienced teachers are generally assigned to schools with the greatest challenges. Given labor agreements, this is a difficult practice to change, but it is one that requires attention.

This picture of one-size-fits-all salary schedules and work rules may be beginning to change. Some of the most effective school district leaders, often working with visionary union officials, are beginning to find new ways to address these challenges (see Sidebar A).

Lack of Diversity

The lack of diversity in the teaching workforce is also an issue. The face of the United States is changing, but the face of the teaching profession is not keeping pace. Fully 42 percent of all public school students are members of minority groups. In most major urban areas, minority students make up clear majorities of enrollment, with Hispanic students now constituting the largest minority group in America. Yet, teaching continues to be dominated by European Americans, primarily white women. Figure 4 outlines the wide dimensions of this issue.

What Figure 4 clearly reveals is a substantial imbalance in the racial and ethnic makeup of the teaching workforce compared to students in the classroom. To create a more representative teaching workforce would require, among other things, doubling the proportion of African American teachers, and tripling the proportion from Hispanic, Native American, Asian, Pacific Islander, and other backgrounds.

Another subtle but quite formidable challenge is not apparent from Figure 4. Three-quarters of all teachers are women—a figure that grows to 91 percent at the elementary school level. In light of growing national concern about the educational and economic well-being of minority males, the need to bring more men—specifically more minority men—into the profession is self-evident.

SIDEBAR A: DIVERSIFYING TEACHER COMPENSATION

A number of efforts are under way to rethink teacher pay systems and to reengineer work rules. Among some of the most prominent are the following:

Douglas County, Colorado

The Douglas County teacher bargaining unit and the board committed to teacher performance pay a decade ago. The program relies on a base salary structure and a voluntary incentive component. Under the base structure, compensation factors in the number of successful evaluation credits a teacher has earned, along with level of education. Increments are not based on length of service, but on building-level formative and summative assessments. Individual incentive bonuses can be earned for National Board certification, a teacher portfolio based on standards, or outstanding student growth. Douglas County also supports incentives for group efforts, development of district-identified skill blocks, master teachers, and assuming additional responsibilities.

Milken Teacher Advancement Plan (TAP)

TAP is a comprehensive whole-school reform effort under way in some 100 schools. It focuses on four elements: (1) multiple career paths, (2) ongoing applied professional growth, (3) instructionally focused accountability, and (4) performance-based compensation. The program includes a comprehensive system for teacher evaluation and rewards teachers for how well they teach, based on classroom observation and student achievement gains. Salary schedules include supplements for master ($15,000) and mentor ($7,000) teachers, as well as performance awards for which all teachers are eligible.

New Mexico

The state has established a new system geared to teacher licensure at three levels. Level I (beginning teacher) requires a bachelor's degree plus 30 hours in content area and full licensure and starts at $30,000 annually. Level II (professional teacher) requires three years of experience at Level I, three years of mentoring, and completion of an annual professional development plan (minimum salary: $40,000). Level III (instructional leader) follows three years at Level II and other requirements that are the equivalent of certification from the National Board for Professional Teaching Standards (minimum salary: $50,000).

ProComp, Denver, Colorado

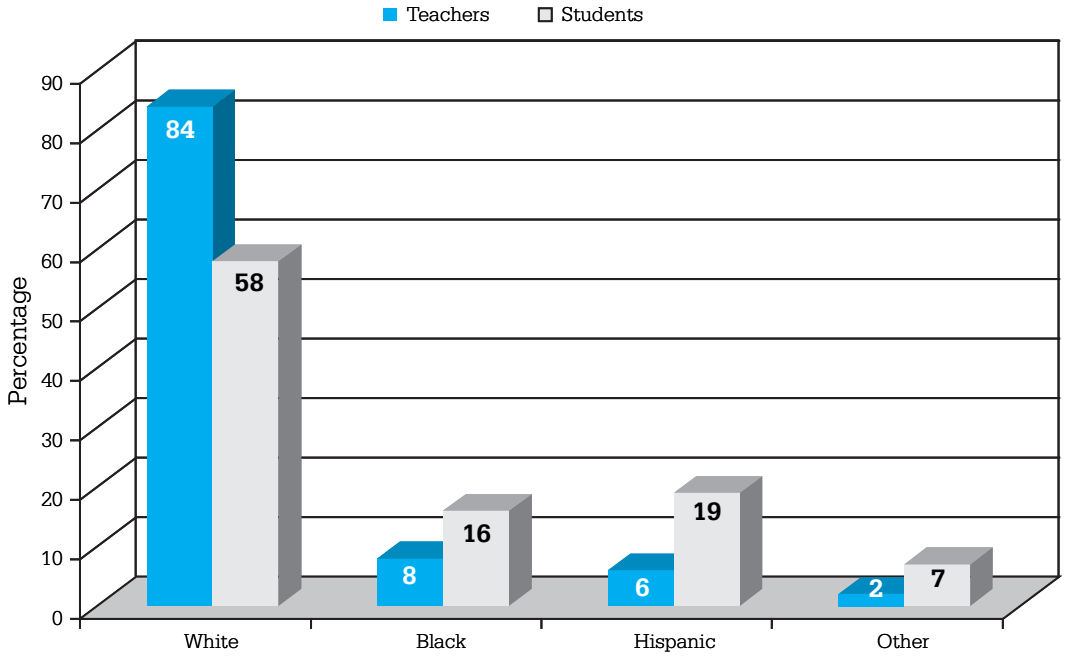
ProComp (Professional Compensation Plan for Teachers) was approved by the Denver school board in February 2004 and accepted by members of the Denver Classroom Teachers Association in March. It grew out of a 1999–2003 pilot "pay for performance program" operated in 16 schools. Denver voters approved a $25 million levy in November 2005 to fund the program. ProComp has four components to build and improve earnings: student growth, teacher knowledge and skills, market incentives, and professional evaluation. Teachers collaborate with principals to set annual student growth objectives that, when attained, produce 3 percent sustainable increases; teachers who complete approved courses and demonstrate their skill can receive 2 percent increases; teachers in hard-to-serve schools receive 3 percent bonuses, as do teachers in hard-to-staff disciplines; and satisfactory evaluations will result in additional 3 percent increases.

Vaughn Next Century Learning Center, Los Angeles

The Vaughn Next Century Learning Center is a Title I charter school in the Los Angeles Unified School District. Teachers are now evaluated by an administrator, a trained peer, and by themselves on four domains: planning and preparation, classroom environment, instruction, and professional responsibilities. Ratings run on a scale of 1 (unsatisfactory) to 4 (distinguished). Base salary for teachers at Vaughn is determined by type of credential and seniority. Performance pay is designated by level. Level 1 requires an average rating of 3.0 in each domain; Level 2 teachers must have an average score across all domains of 3.5 or higher. Teachers reach Level 3 when they achieve all Level 1 requirements and meet Level 2 requirements for 8 of 10 consecutive semesters. Level 3 teachers can receive performance-based pay of up to $13,050 annually.

Sources: Education Commission of the States; The Teaching Commission; State of New Mexico

Figure 4: Diversity Remains Major Challenge in Teaching Workforce



Source: NCES, 2003

Unclear Pathways to Teaching

A longstanding series of criticisms about teacher preparation programs (from both within and outside the profession) have held that many students majoring in education are academically weak, while the curriculum they receive is limited and includes little exposure to clinical practice. Although the best university programs undoubtedly have responded to these criticisms, the reality is that many major universities leave teacher preparation to weaker, frequently unaccredited, programs, which the Hunt Commission referred to as "cash cows" in the mid-1990s. Meanwhile, standards for alternative programs, such as Teach For America, do not exist.

More recent evidence from both the Hunt Commission and the Teaching Commission indicates that perceptions of a crisis in the teacher supply conceivably weaken the commitment to improve teacher preparation. As the Hunt Commission stated in 2003: "Quality teaching is too often compromised in an effort to recruit a sufficient quantity of teachers to fill classrooms. The results: Standards for entry into the profession are lowered; quality teacher preparation is undercut; and the mythology that 'anyone can teach' gains more ground with each fall's round of stopgap funding."

The federal No Child Left Behind legislation, which requires "highly qualified teachers" in every classroom, is designed to address some of these issues. But it might pour fuel on the fire by encouraging state educational agencies and school districts to define "highly qualified" in such a way as to include as many existing and future teachers as possible.

The Center begins with several firm convictions on this point. First, great teachers need a firm grasp of the subjects they teach. Second, in light of the complex pedagogical challenges they

will confront in the classroom, they need a grounding in best practice and sound principles. Third, the education profession should welcome talented midcareer professionals into the classroom.

Clearly, given the amount of turnover in the profession, the claim that traditional teacher preparation programs are the only acceptable way to prepare teachers for American classrooms rests on shaky assumptions. It is akin to fighting fires by pouring water into a leaking bucket. Equally clearly, given the complex pedagogical challenges of today's classrooms, the argument that just about any reasonably able person can step into the classroom with limited preparation is difficult to accept. It is time to abandon the sterile debate between "traditional" and "alternative" teacher preparation programs to make sure that, no matter how they enter the classroom, new teachers have the grounding they need to do their jobs properly.

The ground rules for determining which teacher preparation programs are the most effective may be changing. There is current research—albeit preliminary—that clearly indicates the effectiveness of teacher education programs. Dr. George Noell, a researcher from Louisiana State University and A&M College, has created a Value-Added Teacher Preparation Assessment Model that examines the growth of learning of children taught by new teachers. This model assigns a teacher preparation effectiveness value to each institution. Although this study currently focuses on undergraduate teacher-preparation programs, it is possible that the model could be expanded to study the effectiveness of new teachers from alternate certification programs.

A New Compact

The compact described in the next chapter asks both the nation and the profession to live up to their best instincts. If solutions are to be found, both sides of the compact need to abandon their old ways of thinking. The compact addresses the low salaries provided to teachers. It insists that teachers deserve a professional community and the professional treatment that befits their important role in our national life. It demands that we respond to the crisis in math and science education with the urgency this situation requires. It suggests that work rules need attention. And it calls for innovation and new models for preparing future teachers.

At the outset of this chapter, the Center reviewed the broad positions taken in the teacher improvement discussions. Wedded to their own view of the world, all sides—management, labor, teacher preparation institutions, alternative programs, business leaders, and policymakers—find it easy to dig in and create a sort of gridlock in which defense of inherited positions becomes at least as important as advancing teaching and learning.

The time has come to adopt a different posture. Teachers deserve respect and an income that reflects their high calling. At the same time, the profession needs to understand that the public is not willing to pay more for more of the same. Some of the traditions that lie at the foundation of the current profession need to be reconsidered. Some teaching jobs are more difficult than others. We should say so. In theory, a physics teacher, an English teacher, and a gym instructor are equally valuable. But in practice, the physics lab is understaffed, while English teachers and physical education instructors are looking for work. Policy should recognize reality.

"In a truly rational society, the best of us would be teachers, and the rest would have to settle for something less."

Lee Iacocca, former president, CEO, and chairman of the Chrysler Corporation

In 1996, the National Commission on Teaching and America's Future (the Hunt Commission) suggested "a great national crusade united behind the proposition that *competent teaching is a new student right.*" By the year 2006, said the Commission, "the United States should provide every student with what should be their birthright: access to competent, caring, qualified teaching."

A decade later that goal is still unmet. Progress can be seen here and there, but we are barely halfway home with a long way to go. To respond to the dilemmas outlined in Chapter 2, the Commission offers six recommendations:

- Provide salaries for the real world.
- Make teaching a preferred position.
- Create multiple pathways into teaching.
- Close the diversity gap.
- Fix the math and science crisis.
- Invest for success now, rather than pay for failure later.

I. Provide Salaries for the Real World

WE RECOMMEND *increasing salary expenditures for teaching by 15 to 20 percent now, and up to 50 percent within the foreseeable future, while recognizing that some teaching assignments are more challenging than others and some teaching specialties are scarce.*

RESEARCH FINDINGS

What Different Benchmarks Suggest About How Financially Attractive It Is to Teach in Public Schools by Dan Goldhaber, Research Associate Professor, University of Washington, July 2004

Source: http://www.crpe.org/hot/PDF/teachComp/Benchmarks.pdf

- Compensation is clearly one of the primary considerations when making a career decision and it may be particularly important to those who are just entering the labor market.
- Forty-eight percent of sophomores reported that they would be attracted to teaching if the teacher salary were 45 percent higher than the current level in the local teacher labor market.
- Individuals examine the financial benefits of teaching in relation to those of competing occupations when making job and career decisions.

- Consequently, salary levels can have an impact on who enters and remains in the teacher labor market.

It needs to be said: Our schools will never get the teachers they need with the salaries now offered. Where once schools could rely on the altruism of women with limited career options, schools now operate in a market economy that bids for talent. Earlier generations of Americans kept the compact with teachers and between generations. In the face of the challenges of a new nation, the ravages of civil war, the flow of impoverished masses flocking to the New World, and the trauma of a great global depression, our forebears set aside land for public education. They built common schools. They created state universities and land-grant colleges. They invested in the returning veterans of World War II and Korea. They opened access to higher education to everyone by establishing community colleges and generous student aid programs. They understood the important truths that Jefferson defined: Knowledge is not only national and personal power and safety; it is the "sure foundation for the preservation of freedom." As the inheritors of that legacy, we have an obligation to pass it on.

Implementing Recommendations

- We recommend *increasing salary expenditures* on teachers by an average of *15 to 20 percent now, and by 50 percent within the foreseeable future,* an increase to be funded by the public sector (see Recommendation VI).
  - Local school districts, in consultation with bargaining units, should determine both the average level of the increase and the amount for individual teachers.
  - General salary schedules should reward experience, a demonstrated ability to improve student achievement, and the attainment of new knowledge, experience, and skills that can be used to advance learning.
  - The Center understands the political sensitivities involved in "merit pay" and "pay for performance," but believes, like the late teachers union leader, Albert Shanker, that the profession cannot continue to tolerate a salary structure that pays teachers the same amount, no matter how well or how poorly they perform.
- We recommend implementing an *11-month contract for teachers,* a time frame in part related to salary increases and in part related to the need to provide teachers with more collaborative planning time (see Recommendation II).
- We recommend substantial *additional salary increments* (funded by the private sector) for teaching in *challenging schools* and in *shortage disciplines,* for exemplary *contributions to the profession*, and for teaching and success in *high-level courses* (see Recommendation VI):

Some teaching assignments are more difficult than others. The salary structure should recognize that. On the grounds of both equity and efficiency, this society can no longer accept a system in which schools with the fewest challenges are staffed routinely with the most experienced (and expensive) teachers, while novices staff the most challenging schools.

Teachers in some disciplines are harder to find than in others. Our schools have to be able to pay these teachers more. In mathematics, science, bilingual, and special education, the salary structure should recognize the unique skills required and the powerful economic forces that are drawing skilled teachers into the private sector.

The Center understands that several of these recommendations require changes in work rules. But the nature of a compact is that people work together toward a common goal. Everybody has to bring something to the table. The Center believes work-rule modification is possible and is pleased to note that, in a number of schools in the country, district and union leaders have cooperated to implement such changes. (See Sidebar A in Chapter 2.)

II. Make Teaching a Preferred Profession

WE RECOMMEND ***that state and local school districts set out to establish professional working conditions for teachers by implementing career ladders, creating communities of learning within schools and districts, and establishing mentoring as a benchmark of best practice in hiring and professional development.***

RESEARCH FINDINGS

The Progress of Education Reform 1999–2001: Teacher Recruitment, Vol. 2, No. 2, Education Commission of the States, August–September 2000.

Source: **http://www.ecs.org/clearinghouse/16/53/1653.htm**

Perceptions About Teaching

Many experts believe that perceptions about the teaching profession are a critically important factor in people's decisions to pursue a teaching career, and that negative and unrealistic perceptions must be addressed if more people are to be attracted to teaching. Survey data reveal a number of interesting—and conflicting—beliefs and attitudes:

- A 1999 poll by the Rockefeller Foundation and the Public Relations Society of America Foundation found teachers' credibility among the public to be second only to that of Supreme Court justices. Similarly, the 1998 Recruiting New Teachers poll ranked teaching as the profession of greatest benefit to society and the career that, next to medicine, people would most recommend to a family member.
- A recent Public Agenda survey, *A Sense of Calling: Who Teaches and Why?* showed that a majority of college graduates who do not enter teaching believe teachers do not feel adequately respected and appreciated. In addition, most graduates surveyed believe that teaching involves more talent and hard work than many other professions, that teachers often are the scapegoat for the problems facing education, that teachers are greatly underpaid and have inadequate opportunities for career advancement, and that they too often have to worry about their safety.

- While the public believes that good teachers make a huge difference, few people believe finding them is a big problem. More than half (52 percent) of respondents to the most recent Phi Delta Kappa/Gallup Poll of the Public's Attitudes Toward the Public Schools said putting a qualified, competent teacher in every classroom offers the greatest promise of improving public schools. Only 4 percent, however, said difficulty in getting good teachers is the biggest problem facing their local schools.

Schools have been described as "egg cartons" into which teachers are assigned to individual classrooms, largely isolated from one another. By and large, no distinction is made between the novice teacher and the grizzled veteran in terms of performance expectations. Isolation and the inability to examine best practices with colleagues are near-universal complaints of teachers, who are expected to work on an individual basis with up to 180 students in six hours of teaching daily. Time for reflection or planning is a precious commodity in short supply.

Implementing Recommendations

- We recommend nationwide adoption of *career ladders,* perhaps in imitation of New Mexico's exemplary three-tiered teacher licensure system.
  - Level I (Beginning Teacher) requires a bachelor's degree and 30 hours in content area, passing appropriate tests, and full licensure. (Minimum pay: $30,000)
  - Level II (Professional Teacher) requires three years of experience at Level I, three years of mentoring, and completion of an annual professional development plan and summative evaluation. (Minimum pay: $40,000)
  - Level III (Instructional Leader) follows three years at Level II, requiring annual verification as a "highly qualified" teacher, annual professional development programs, earning of a master's degree or certification from the National Board for Professional Teaching Standards. (Minimum pay: $50,000)
- We recommend that every state develop and fund *mentoring programs* to provide novice teachers with access to the experience and wisdom of their more experienced peers.
  - Programs ideally will include a full year of mentoring during teacher preparation.
  - Programs should also include two years of mentored induction.
- We recommend that every school district explore the possibility of providing each teacher a guaranteed *half day a week for lesson preparation and grading.* In September 2005, British schools began to implement just such a program for every teacher in publicly supported schools. The United States can do the same.
- We urge state and local education leaders to explore professional development opportunities aimed at creating schools as *learning communities* that encourage positive learning environments for students, teachers, and administrators; employ a variety of assessment strategies; integrate technology into the curriculum; and create communities of "reflective practice" in which teachers, staff, and parents collaborate to improve learning.

Teaching should become a preferred profession, indeed a revered one. It should not be something college graduates settle for, or do for a few years until their interests clarify. It must become a profession to which young people aspire and community leaders respect.

III. Create Multiple Pathways into Teaching

WE RECOMMEND ***a cease-fire in the holy war between traditional and alternative teacher-preparation programs so that quality preparation around substance and practice becomes the norm in preparation programs, whether located in colleges and universities, school districts, or nonprofit organizations***

RESEARCH FINDINGS

Studying Teacher Education, American Educational Research Association, June 20, 2005.

Source: http://www.aera.net/uploadedFiles/News_Media/News_Releases/2005/STE-What-WeKnow1.pdf

- Although research on the impact of different types of teacher education programs does not provide clear evidence of the superiority of any particular program type (e.g., four-year versus five-year, traditional versus alternative), it does suggest that program components, such as clear and consistent vision of teaching and learning, are related to teacher quality and student achievement.
- Research points out that, under the right conditions, strategies used in teacher education programs, such as case studies and teaching portfolios, can result in changes for the better in students' knowledge and beliefs, in the ability to identify important instructional issues, and in their proficiency to teach.
- Evidence indicates that initially certain course work and school and community fieldwork in teacher education programs may positively affect candidates' attitudes, knowledge, beliefs, and confidence about teaching culturally diverse learners.

Students deserve teachers who know their subjects, understand students and their learning needs, and have developed the skills essential to making learning come alive. Industrial chemists understand chemistry, but it is only happenstance if they know anything about students or how to teach. Teachers immersed in pedagogy may reveal some substantive shortcomings, even if they understand students and teaching.

The current teaching preparation system, despite improvements, does not meet all the nation's needs. The chronic reality of out-of-field teachers and the difficulties of staffing at some schools point to the complexities of the challenge. At the same time, promising alternative programs such as Teach For America arguably provide able and enthusiastic (if inexperienced) novice teachers in some very difficult schools.

The sterile debate about which teaching system is superior to the other is counterproductive. Students and schools need to be able to draw on the best teaching talent they can find.

Implementing Recommendations

- We recommend *multiple pathways* into the teaching profession.
  - Both traditional and alternative routes should be encouraged.
  - No potential new teacher, even the most promising, should be permitted to be in a classroom without some exposure to elements of pedagogy, classroom practice, and classroom management.
  - The Center believes that, at a minimum, alternative programs should be required to provide six to eight weeks of training, after which teacher candidates would be required to pass an assessment of their knowledge of content and practice.
  - Teachers who enter through such alternative routes should be maintained in probationary status until they complete, during evenings and summers, a master's degree, pass appropriate tests, and receive full state licensure.
  - Teachers on probationary status would not by definition be deemed "fully qualified." Until they received a license, they would not be eligible to begin the career ladder described in Recommendation II.

IV. Close the Diversity Gap

WE RECOMMEND *abandoning the expectation that teacher-diversity goals will take care of themselves. Higher education must mount intense and targeted recruitment programs for minority students, programs that emphasize financial aid, along with loan forgiveness tied to years of teaching service.*

RESEARCH FINDINGS

Assessment of Diversity in America's Teaching Force: A Call to Action, Presented by National Collaborative on Diversity in the Teaching Force, Washington, D.C., October 2004.

Source: **http://www.nea.org/teacherquality/images/diversityreport.pdf**

The Impact of Teachers of Color on Student Achievement

More teachers of color would:

- increase the number of role models for students of color;
- provide opportunities for all students to learn about ethnic, racial, and cultural diversity;
- be able to enrich diverse students' learning because of shared racial, ethnic, and cultural identities; and
- serve as cultural brokers, able not only to help students navigate their school environment and culture, but also to increase the involvement of other teachers and their students' parents.

Race is one of the great fault lines running through American life. It remains what economist Gunnar Myrdal once described as "an American dilemma." Despite great progress in advancing civil rights over the last several decades, equal opportunity remains a promise that has yet to be kept in the United States.

In recent years, national policy has focused attention on the "achievement gap" between majority and minority students. The Center believes the achievement gap will be easier to remedy if the diversity gap in the teaching force is addressed vigorously.

- We recommend a national effort designed to *create a teaching force that looks like America*—that is to say, a teaching workforce in which the number of minority teachers matches the number of minority students.
- This effort should include intensive *marketing programs in minority schools* and communities—programs that focus on the very best, that emphasize financial aid and loan forgiveness, new opportunities available in teaching, and the value of education and the importance of teachers to minority communities and students.
- We recommend a new *Teachers Corps* that would support teacher education programs at minority-serving institutions, including historically black colleges and universities, tribal colleges, and colleges serving predominantly Hispanic student populations.
- *Generous loan forgiveness features* (up to 20 percent per year) should be provided to encourage all students (majority and minority) to teach in the most challenging urban and rural schools.

V. Fix the Math and Science Crisis

WE RECOMMEND *incentive programs to increase the number of young people entering careers in mathematics, science, and engineering (and into mathematics and science teaching) by 50 percent.*

RESEARCH FINDINGS

Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future, Committee on Prospering in the Global Economy of the 21st Century: An Agenda for American Science and Technology, National Academy of Sciences, National Academy of Engineering, Institute of Medicine, prepublication text, February 2006.

Source: **http://fermat.nap.edu/catalog/11463.html#description**

This congressionally requested report by a preeminent committee makes four recommendations along with 20 implementation actions that federal policymakers should take to create high-quality jobs and focus new science and technology efforts on meeting the nation's needs, especially in the area of clean, affordable energy:

1. Increase America's talent pool by vastly improving K–12 mathematics and science education;
2. Sustain and strengthen the nation's commitment to long-term basic research;
3. Develop, recruit, and retain top students, scientists, and engineers from both the United States and abroad; and
4. Ensure that the United States is the premier place in the world for innovation.

Table 1: Bachelor's Degrees Conferred in Mathematics, Science, and Engineering, 2002–03

Discipline	Degrees Conferred, 2002–03
Biological and Biomedical Sciences	60,000
Computer and Information Sciences	57,000
Engineering	63,000
Engineering Technologies	15,000
Health Professions and Clinical Sciences	71,000
Mathematics and Statistics	12,000
Physical Sciences and Science Technologies	18,000
TOTAL	**296,000**

Source: Digest of Education Statistics, National Center on Education Statistics, 2004, Table 250. (Numbers rounded to nearest thousand.)

Numbers are always useful guides to policy. Table 1 indicates that American colleges and universities are awarding close to 300,000 bachelor's degrees in mathematics, science, and engineering fields annually, about one-fifth of all degrees awarded. Although the number is impressive, the proportion lags far behind the rates at which technical degrees are awarded in nations such as South Korea (38 percent), France (47 percent), China (50 percent), and Singapore (67 percent).[10]

In a nation enrolling more than 16 million students in institutions of higher education, the task of dramatically increasing the number of students attracted to careers in mathematics, science, and engineering should be trivial. It is hard to understand why policymakers and leaders of higher education have stood by and permitted the educational infrastructure of the nation's science and technology capacity to erode. Fortunately, this shortsightedness seems to be coming to an end. The recommendations developed by the National Academy of Sciences and endorsed by President Bush offer a solid guide on how to proceed. They promise to increase the number of American students graduating with degrees in mathematics, science, and engineering by 50 percent.

Implementing Recommendations

The Center endorses the NAS recommendations that call for:

- *Merit-based scholarships* to attract 10,000 exceptional students into mathematics, science, and engineering teaching careers annually, with a requirement that graduates teach for a minimum of five years.
- *New competitive four-year undergraduate scholarships* (up to 25,000 annually) for U.S. citizens enrolling in the physical sciences, life sciences, engineering, and mathematics programs of U.S. colleges and universities.
- *New competitive fellowships* (up to 5,000 annually) for U.S. citizens enrolling in the graduate programs in the same disciplines.
- Increasing the national investment in *basic research* by 10 percent annually.

- Establishing within the U.S. Department of Energy an Advanced Research Projects Agency-Energy (ARPA-E) (an entity similar to the Defense Advanced Research Projects Agency, which developed the Internet) to support "out-of-the-box" *energy research* to meet the nation's long-term energy challenges.

American higher education remains the envy of the world. The nation's academic strengths and entrepreneurial spirit mark the United States as the most attractive setting on the face of the earth for study and research. In a newly globalized economic world, America should embrace that strength, not ignore it.

VI. Invest for Success Now, Rather Than Pay for Failure Later

WE RECOMMEND *a national fund, a Teachers' Trust, devoted to supporting these reforms and financed by a federal appropriation, matched by state and local revenues and a special assessment on corporate windfall profits.*

RESEARCH FINDINGS

Teaching at Risk: Progress & Potholes, The Teaching Commission, Final Report, Spring 2006.

Source: **http://www.theteachingcommission.org/press/pdfs/ProgressandPotholes.pdf**

A fiercely competitive global information economy, powered as never before by innovation and intellect, demands that America's young people be well educated. It is not only their individual potential that hangs in the balance; it is the nation's economic future. Yet today, though some positive trends are emerging in the wake of the standards movement and the No Child Left Behind law (particularly in minority students' progress), our public schools still struggle to teach our children what they need to know—from math, science, and engineering to reading, writing, history, and critical thinking skills.

- By fourth grade, American students have fallen behind students in countries including Singapore, Japan, Latvia, and the Russian Federation in math.
- In international comparisons of 15-year-olds' reading literacy, our students rank behind those in 11 other major nations
- The number of college graduates proficient in English fell from 40 percent in 1992 to 31 percent in 2003.
  - When students enter the workforce, employers are forced to spend millions of dollars on remediation.
- Black and Hispanic twelfth-graders in America on average perform at the same level in reading and math as white eighth-graders

One of the encouraging features of the school reform movement of recent decades is the consistent and long-standing commitment to standards and higher student achievement from American leaders, including those in the business community. Unfortunately, the support for standards is rarely accompanied with the investment required to turn around a K–12 system enrolling more than 50 million students and employing nearly 3 percent of the American workforce. Teaching in America is a massive human enterprise. Its professional development requirements dwarf the training needs of the American military.

Although cost savings are undoubtedly possible in this huge system, if the nation wants the best people teaching in its classrooms, it can no longer rely on altruism. Compacts are not a one-way street. The Center is asking teachers to rethink their bargaining units' long-standing commitment to some work rules. We ask the American people to back their commitment to better schools with greater financial support for teachers. "Excellence costs," as the National Commission on Excellence in Education told President Reagan in 1983, "but mediocrity costs much more."

We recommend that the people of the United States, through their government, reaffirm the value of teaching to the nation's future by establishing a public/private partnership to finance the changes outlined here.

Sidebar B outlines how the partnership would be structured through a national Teachers' Trust. The trust would hold funds for both a general salary increase and targeted increases to support teachers in shortage disciplines, teachers in challenging schools, and teachers who are making exemplary contributions to the profession. The trust would require legislation that would:

- Establish a Teachers' Trust, made up of two components—a 15 to 20 percent general increase immediately, and up to 50 percent in the foreseeable future, supported by federal, state, and local contributions; and a 10 percent targeted increase for shortage areas, supported by the private sector, perhaps through an assessment on windfall profits.
- Require the federal government to provide at least 10 percent of the proposed increase in the form of a contribution to the trust.
- Provide that states and localities that matched the federal contributions by 5:1 and 4:1 ratios would be eligible for salary supplement awards from the Teachers' Trust. These awards would provide 10 percent increments to teachers who make exemplary contributions to their schools (as certified by local school boards) or to those teaching in challenging schools or shortage disciplines.

Can the United States afford these expenditures? The reality is it cannot afford not to make them. This is an investment, not an expense. Unless this country is able to attract the best people to its classrooms, it is unlikely to reach its larger education goals. It is a fantasy to believe we can attain educational excellence while teachers are among the poorest paid college graduates in the country. The teachers of the nation's children should be paid at least what many beginning bookkeepers and administrative assistants earn.

SIDEBAR B: INCREASING INSTRUCTIONAL SALARIES

Instructional Salaries & Benefits (2002-03)	**$215 billion***	
General 20% Increase:		**$43 billion**
Source:		
Federal Share (10%)	$4.30	
State Share (50%)	$21.50	
Local Share (40%)	$17.20	
Total		**$43 billion**
10% increment for challenging schools, shortage disciplines, and professional contributions		**$21.5 billion**
Source:		
Windfall profits assessment	$21.50	
Total Increase		**$64.5 billion**

***Source:** National Center for Education Statistics, Revenues and Expenditures for Public Elementary and Secondary Education: School Year 2002-03. Table 6: "Current Expenditures for Instruction…" (Washington, D.C.: U.S. Department of Education, October 2005).

The increases described in this document are modest. They represent about 5 percent of all expenditures on public elementary and secondary education. And they represent fairly small amounts in the vast federal budget. Most important, these expenditures will be repaid to public treasuries. A powerful and convincing body of research demonstrates that funds invested in education are returned to their communities many times over in the form of increased productivity, improved tax revenues, and savings in such areas as public assistance and the criminal justice system. We should invest for success now, instead of paying more for failure later.

A Final Word

At the outset of this document, the Center noted that a perfect economic storm aimed at America is forming. It threatens not simply the nation's economic well-being, but important values in American life.

The United States has a long-standing commitment to three important safeguards of a civil society. First is the right of all children to a free and appropriate public education. Second is the right of older Americans to live out their retirement years in dignity. And third is the right to a secure America, free from external threat. All Americans believe in those values—and all of these values are at risk.

The reality is that many other nations are far better equipped to respond to the changes around them with "command and control" policies. Americans have always, quite properly, avoided detailed government planning, placing their faith, instead, in the innovations produced by entrepreneurship and a free market. Still, we should be clear about our long-term priorities and about the importance of protecting essential American interests.

A national consensus about critical domestic priorities must be shaped. To that end, the Center will convene a national conversation among leaders of American education and leaders of American health care, a conversation insisting that public leaders make the investments in education and health care essential to America's future. The complex trade-offs required to steer America through the stormy waters it is entering involve domestic and foreign policies, trade and budgetary issues, tax and spending decisions, and choices between consumption today and investment for tomorrow. In these discussions, a coalition of coequals from health care and education can remind policymakers that children are our future, in a real, not simply a rhetorical, sense, and that older Americans are our inheritance.

For more than two centuries, public schools have helped make America what it is today. They helped to form our understanding of what it means to be an American. They produced the workforce that long made the American economy the envy of the world. In knitting together strands from many different nations and peoples, they have made the United States immeasurably more powerful and secure than it would otherwise have been. Amidst the challenges and perils of the modern world, the continued contributions of public schools to the nation's security and economic strength are needed, now more than ever.

In these schools, teachers touch the American future every day. They do so by producing good citizens, good employers, good employees, and good people. They do so by turning out the entrepreneurs, public officials, public safety officers, teachers, university professors, business managers, members of the armed forces, and elected officials who lead America forward in the best of times, and protect it in the worst of times. They do so because they are committed to giving shape and meaning to the American credo that all citizens are equal, with "unalienable" rights to "life, liberty, and the pursuit of happiness," to a life free of the indignities of oppression and full of the blessings of freedom.

In the end, teachers choose to teach because they are committed to maintaining their side of the compact. However, this commitment on its own is insufficient without a concurrent pledge by the American public. Without such a commitment, America's future is not only uncertain, it is in serious jeopardy.

Endnotes

1. Mark Trumbull, "Is Rising U.S. Public Debt Sustainable?"
2. Warren E. Buffett, "To the Shareholders of Berkshire Hathaway Inc."
3. American Electronics Association, *Cyberstates 2006.*
4. "Occupational Employment Projections to 2014," *Monthly Labor Review*, Table 3.
5. Committee on Prospering in the Global Economy of the 21st Century, *Rising Above the Gathering Storm*.
6. *Rising Above the Gathering Storm*.
7. *Rising Above the Gathering Storm*.
8. *Rising Above the Gathering Storm*.
9. See Gary Gereffi and Vivek Wadhwa, *Framing the Engineering Outsourcing Debate*. The analysis indicates that for every one million citizens, the United States is producing "roughly 750 technology specialists, compared with 500 in China and 200 in India," but concludes that if the United States is to retain its legacy as a preeminent technological innovator it needs to increase enrollments in engineering colleges.
10. *Rising Above the Gathering Storm*.

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BIBLIOGRAPHY

American Association for Employment in Education. *Educator Supply and Demand in the United States*. Columbus, Ohio: American Association for Employment in Education, 2004.

American Association of State Colleges and Universities. "The Facts—and Fictions—About Teacher Shortages." *Policy Matters* 2, no. 5 (May 2005).

American Electronics Association. *Cyberstates 2006*. Santa Clara, Calif.: American Electronics Association, 2006.

Buffett, Warren E. "To the Shareholders of Berkshire Hathaway, Inc." Annual letter to shareholders from the Chairman of the Board, February 28, 2005. Available at www.berkshirehathaway.com/letters/2004ltr.pdf.

Bureau of Labor Statistics, U.S. Department of Labor. "Occupational Employment Projections to 2014." *Monthly Labor Review* (Nov. 2005): Table 3. Available at www.bls.gov/emp/emptab3.htm.

Center for the Future of Teaching and Learning. *California's Teaching Force 2004: Key Issues and Trends*. Long Beach and Oakland, Calif.: California State University and University of California, 2004.

Crosby, Brian. *The $100,000 Teacher: A Solution to America's Declining Public School System.* Herndon, Virginia: Capital Books, 2002.

Darling-Hammond, Linda. "Study Sees Positive Effects of Teacher Certification." *Education Week* (April 27, 2005).

Darling-Hammond, Linda. "What Leaders Can Do." *Educational Leadership* (May 2003).

Darling-Hammond, Linda, and Joan Baratz-Snowden. *A Good Teacher in Every Classroom: Preparing the Highly Qualified Teachers Our Children Deserve*. San Francisco: Jossey-Bass, 2005.

Darling-Hammond, Linda, Deborah J. Holtzman, Su Jin Gatlin, and Julian Vasquez Heilig. *Does Teacher Preparation Matter? Evidence about Teacher Certification, Teach for America, and Teacher Effectiveness*. Palo Alto, Calif.: Center for Teacher Education and School Reform, 2005.

Darling-Hammond, Linda, and Gary Sykes. "Wanted: A National Teacher Supply Policy for Education: The Right Way to Meet the 'Highly Qualified' Teacher Challenge." *Educational Policy Analysis* Archives 11, no. 33 (Sept. 2003).

Feiman-Nemser, Sharon. "What New Teachers Need to Learn." *Educational Leadership* (May 2003).

Ferriter, William, and John Norton. "Creating a Culture of Excellence." *Threshold* (Spring 2004): 18–21.

Futernick, Ken. *A Study of Teacher Retention in California*. Sacramento, Calif.: California State University, Office of the Chancellor, 2005.

BIBLIOGRAPHY

Gerald, Debra E., and William Hussar. "Projections of Education Statistics to 2013." *Education Statistics Quarterly* 5, no. 4 (August 2004).

Gereffi, Gary, and Vivek Wadhwa. *Framing the Engineering Outsourcing Debate: Placing the United States on a Level Playing Field with China and India*. Durham, N.C.: Pratt School of Engineering at Duke University, 2005.

Gilbert, Linda. "What Helps Beginning Teachers?" *Educational Leadership 62*, no. 8 (May 2005).

Henke, Robin, et al. *Elementary/Secondary School Teaching Among Recent College Graduates: 1994 and 2001*. NCES 2005-161. Washington, D.C.: National Center for Education Statistics, 2005.

Hussar, William. "Predicting the Need for Newly Hired Teachers in the United States to 2008-09." *Education Statistics Quarterly* 1, no. 4 (February 2000).

Ingersoll, Richard M. *Is There Really a Teacher Shortage?* Seattle: Center for the Study of Teaching and Policy at the University of Washington, 2003.

Ingersoll, Richard M. *Turnover Among Mathematics and Science Teachers in the U.S.* Paper prepared for the National Commission on Mathematics and Science Teaching for the 21st Century. Philadelphia, Pa.: Graduate School of Education at the University of Pennsylvania, 2000. Available at www.ed.gov/americacounts/glenn/compapers.html.

Ingersoll, Richard M. *Why Do High-Poverty Schools Have Difficulty Staffing Their Classrooms with Qualified Teachers?* Paper prepared for Renewing Our Schools, Securing Our Future: A National Task Force on Public Education. Philadelphia, Pa.: Graduate School of Education, University of Pennsylvania, 2004. Available at www.americanprogress.org.

Ingersoll, Richard M., and Thomas Smith. "The Wrong Solution to the Teacher Shortage." *Educational Leadership* (May 2003).

Johnson, Susan Moore. *Finders and Keepers*. Cambridge, Mass.: Project on the Next Generation of Teachers, 2004.

Johnson, Susan Moore, and Sarah Birkeland. "The Schools That Teachers Choose." *Educational Leadership* (May 2003).

Johnson, Susan Moore, and Susan M. Kardos. "Bridging the Generation Gap." *Educational Leadership* 62, no. 8 (May 2005).

Koppich, Julia, Carla Asher, and Charles Kerchner. *Developing Careers, Building a Profession: The Rochester Career in Teaching Plan*. Washington, D.C.: National Commission on Teaching and America's Future, 2002.

BIBLIOGRAPHY

Laczko-Kerr, Ildiko, and David Berliner. "In Harm's Way: How Undercertified Teachers Hurt their Students." *Educational Leadership* (May 2003).

Liu, Edward, Susan Kardos, David Kauffman, Heather Peske, and Susan Moore Johnson. *Barely Breaking Even: Incentives, Rewards, and the High Costs of Choosing to Teach*. Cambridge, Mass.: Project on the Next Generation of Teachers, 2000.

Luekens, Michael T., Deanna M. Lyter, and Erin E. Fox. "Teacher Attrition and Mobility: Results for the Teacher Follow-up Survey, 2000-01." *Education Statistics Quarterly* 6, no. 3 (July 2005).

McCann, Thomas M., Larry R. Johannessen, and Bernard Ricca. "Responding to New Teachers' Concerns." *Educational Leadership* 62, no. 8 (May 2005).

Miller, Samuel, Gerald G. Duffy, Jean Rohr, Robert Gasparello, and Sue Mercier. "Preparing Teachers for High-Poverty Schools." *Educational Leadership* 62, no. 8 (May 2005).

Muir, Ed, F. Howard Nelson, and Aaron Baldaro. *Survey and Analysis of Teacher Salary Trends, 2004*. Washington, D.C.: American Federation of Teachers, 2005.

National Academy of Sciences. *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future*. Washington, D.C.: National Academies Press prepublication text, February 2006 edition. Available at www.nap.edu/catalog/11463.html.

National Center for Education Statistics. "Out-of-Field Teaching by Poverty Concentration and Minority Enrollment." *Condition of Education* (2004).

National Commission on Mathematics and Science Teaching for the 21st Century. *Before It's Too Late*. Washington, D.C.: National Commission on Mathematics and Science Teaching for the 21st Century, 2000. Available at http://www.ed.gov/americacounts/glenn/.

National Commission on Teaching and America's Future. *No Dream Denied: A Pledge to America's Children*. Washington, D.C.: National Commission on Teaching and America's Future, 2000.

National Commission on Teaching and America's Future. *What Matters Most: Teaching and America's Future*. Washington, D.C.: National Commission on Teaching and America's Future, 1995.

National Education Association. *Status of the American Public School Teacher, 2000–2001*. Washington, D.C.: NEA, 2003.

BIBLIOGRAPHY

National Governors Association. *Teacher Supply and Demand: Is There a Shortage?* Washington, D.C.: NGA Center for Best Practices, 2003.

Nieto, Sonia. "What Keeps Teachers Going?" *Educational Leadership* (May 2003).

Patterson, Mary. "Hazed!" *Educational Leadership* 62, no. 8 (May 2005).

Provasnik, Stephen, and Scott Dorfman. *Mobility in the Teacher Workforce*. NCES 2005-094. Washington, D.C.: National Center on Education Statistics, Condition of Education Special Analysis, 2005.

Salvo, Justine C., Lolethia Kibble, Mary Anthony Furay, and Edward A. Sierra. "Surviving Day One… and Beyond." *Educational Leadership* 62, no. 8 (May 2005).

Shank, Melody J. "Common Space, Common Time, Common Work." *Educational Leadership* 62, no. 8 (May 2005):16–19.

Southeast Center for Teaching Quality. *Teacher Working Conditions Are Student Learning Conditions: A Report to Governor Mike Easley on the 2004 North Carolina Teacher Working Conditions Survey*. Chapel Hill, N.C.: SCTL, 2005. Available at www.teachingquality.org.

Southwest Educational Development Laboratory. "Teachers—They Matter Most." *SEDLetter* XIII, no. 2 (October 2001). Available at www.sedl.org/pubs/sedletter/v13n02/1.html.

Teaching Commission. *Teaching at Risk: A Call to Action*. New York: CUNY Graduate Center, January 2004.

Teaching Commission. *Teaching at Risk: Progress and Potholes*. New York: The Teaching Commission, 2006.

Texas Center for Education Research. *The Cost of Teacher Turnover*, paper prepared for the Texas State Board for Educator Certification. Austin, Tex.: November 2000.

Trumbull, Mark. "Is Rising Public Debt Sustainable?" *Christian Science Monitor* (March 14, 2006).

Useem, Elizabeth, and Ruth Curran Neild. "Supporting New Teachers in the City." *Educational Leadership* 62, no. 8 (May 2005).

Wayne, Andrew J., Peter Youngs, and Steve Fleischman. "Improving Teacher Induction." *Educational Leadership* 62, no. 8 (May 2005): 76–78.