

**WHAT THE U.S. CAN LEARN FROM THE WORLD'S
MOST SUCCESSFUL EDUCATION REFORM EFFORTS**

By

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Introduction

The results of the most recent Program for International Student Assessment (PISA) tests were announced on December 7, 2010 by the Organization for Economic Cooperation and Development (OECD). PISA provides a detailed assessment and comparison of what 15 year-old students in 74 education systems have learned and how well they can apply knowledge.

PISA results for U.S. students fell around the OECD average range, as they have for the past decade, with scores around the average for reading and science and below average in mathematics. Recent top performers – nations as diverse as South Korea, Finland, Canada, The Netherlands and Japan – continued to rank among the top ten in combined average scores.

The surprise came from Shanghai-China, where students taking PISA exams for the first time leapt into first place in all three areas, with combined average scores of 600 (math), 556 (reading) and 575 (science).

Former Reagan Administration Secretary of Education Chester E. Finn Jr., said he was “stunned” at the results. “I’m thinking Sputnik,” he added.¹

Finn’s mention of the 1957 launch of the Soviet Union’s Sputnik satellite is as encouraging for U.S. education officials as it is apt. The U.S. recovered quickly from the Sputnik setback, overtaking the Soviet space program and putting a human being on the moon less than 12 years after Sputnik’s launch. Any nation that can successfully regain its leadership position that dramatically can certainly find it within its power to improve its educational system to make it more competitive with the world’s best-performing countries today.

A world leader in education

The U.S. was the first country to offer every young person the opportunity to obtain a free public secondary education at the end of the 19th and beginning of the 20th Century and reaped tremendous economic rewards for doing so.

By 1910 only nine percent of people in the U.S. had finished high school,ⁱⁱ and yet the U.S. was already ahead of all other nations in terms of post-elementary enrollment rates.ⁱⁱⁱ The U.S. economy boomed during the early 20th Century “teen” years and the 1920s as a result. By 1935, 40 percent of U.S. citizens had finished high school,^{iv} and less than a decade later the U.S. could boast having the best educated workforce in the world.^v

The U.S. also led the world in the number of people earning post-secondary college and university degrees after World War II, when the G.I. bill made it possible for thousands of returning veterans off to obtain a higher education, fueling yet another period of economic expansion in the U.S. in the 1950s and ’60s. The large cohort of U.S. Baby Boomers began going on to college as a matter of course in the late ’60s, and by the end of the 1970s a college degree was viewed by most people in the U.S. as the single most important factor in obtaining – not just a good job – but a career, and an economically secure life.

Now, in the high-tech, globally inter-connected world of the 21st Century, obtaining post-secondary education and training is quickly becoming even more essential for individual economic achievement, and to ensure the success of entire nations and economies. Jobs and investment capital in today’s markets flow to those countries that have the best educated people.

The U.S. is still an attractive place to do business in many ways, and there could be more job opportunity and economic security in the future for U.S. workers – if the country can raise its educational achievement levels to become more competitive with top-performing PISA nations such as China, Canada, Korea, Japan and Finland.

The stakes are high for the U.S.

The benefits of improving U.S. educational achievement could be significant.

- A recent study by the OECD, done in collaboration with the Hoover Institute at Stanford University, suggests that if the U.S. could boost its average PISA scores by 25 points over the next 20 years (a result achieved by Poland in six years, between 2000 and 2006), it could lead to a gain of \$41 trillion for the U.S. economy over the lifetime of the generation born in 2010 (as evaluated at the start of reform in terms of real present value of future improvements in GDP).
- Bringing the U.S. up to the average performance of Finland, the best performing OECD education system in PISA, could result in gains on the order of \$103 trillion.

- Simply narrowing the achievement gap between the U.S. and other OECD nations by bringing all students to a level of minimal proficiency (i.e. every student reaching a PISA score of at least 400), could imply GDP increases for the U.S. of \$72 trillion according to historical growth relationships.^{vi}

Can the U.S. learn from high-performing PISA countries and improve its performance?

Can the U.S. learn how to improve its education outcomes by looking to the example of high-performing PISA nations like China, Finland, Japan, The Netherlands, Canada and South Korea?

The fact that many countries have seen rapid progress in their education systems shows that the answer is a resounding “yes!”:

- Poland raised the performance of its 15 year-olds in reading by the equivalent of over half a school year in less than a decade. It also succeeded in cutting in half the performance differences between different schools;
- Two generations ago, South Korea ranked 24th in terms of educational output among today’s OECD countries – now it is among the top performers, and has more than doubled the percentage of its students reaching level 5 or higher since 2000;
- Canada has been among the top performers in PISA over the last decade, with strong teachers unions and, until recently, a decentralized education system similar to the United States; and
- Individual U.S. schools and districts in Miami, Boston, Long Beach, California and Charlotte-Mecklenburg, North Carolina have all documented substantial gains in student achievement by taking bold action to revitalize failing schools.

A 2010 follow-up to a 2007 McKinsey report – How the World’s Best Performing School Systems Keep Getting Better – concludes that “[i]mproving system performance ultimately comes down to improving the learning experience of students in their classrooms” and that systems achieve the best results when they “change their processes by modifying curriculum and improving the way that teachers instruct and principals lead.”^{vii}

Co-author of this paper, Dr. Steven Paine, after seeing first-hand the success of reform efforts in Singapore, Finland and Ontario, Canada undertook a radical reform effort in 2005 as Superintendent of Education for West Virginia, based on the effective education strategies of these systems. West Virginia’s curriculum was totally revamped to bring it closer to the standards demanded by the PISA and the U.S. National Assessment of Educational Progress (NAEP) tests.

The result was Global21, a state-wide initiative to develop self-directed, motivated and life-long learners; people with the skills necessary to be successful in a digital world.

Dr. Paine writes:

It was a challenge to convince so many stakeholders – parents, teachers, legislators and my fellow education leaders in West Virginia that it was in our interests to raise our standards and suffer a short-term drop in scores to achieve a long term benefit. Some asked “why do we have to aim so high as Finland and Singapore and those places?” And my response was, “if we’re going to spend the effort and money necessary to raise standards, we might as well shoot for the top and align them with the best practices for global achievement, since that’s where our young people are going to be competing in the 21st Century – with the best educated workers from all around the globe.”

Some things high-performing education systems are doing differently than the U.S.

1. *The teaching profession in the U.S. does not have the same high status as it once did, nor does it compare with the status teachers enjoy in the world’s best-performing economies.*

Many nations declare that they are committed to children and that education is important. The test comes when these commitments are weighed against others. How do they pay teachers compared to the way they pay others with the same level of education? How are education credentials weighed against other qualifications when people are being considered for jobs? Would you want your child to be a teacher? How much attention do the media pay to schools and schooling? Which matters more, a community’s standing in the sports leagues or its standing in the student academic achievement league tables?

International comparisons show that in the countries with the highest performance, teachers are typically paid better relative to others, education credentials are valued more, and a higher share of educational spending is devoted to instructional services than is the case in the United States.

Teaching in the U.S. is unfortunately no longer a high-status occupation. Anecdotally, it appears that few parents wish to see their children enter the profession. Despite the characterization of some that teaching is an “easy” job – with short hours and Summers off – the fact is that successful, dedicated teachers in the U.S. work long hours for little pay and, in many cases, insufficient support from their leadership.

- According to a 2005 National Education Association (NEA) report, nearly 50 percent of new teachers leave the profession within their first five years teaching; they cite poor working conditions and low pay as the chief reasons.^{viii}
- High school teachers in the U.S. work longer hours^{ix} (approximately 50 hours, according the NEA),^x and yet the U.S. devotes a far lower proportion than the average OECD

country does to teacher salaries.^{xi} This is of particular concern when one considers that most high performing nations prioritize the quality over class sizes.

Some will say that these are cultural matters and not amenable to change, but in countries as different as Finland, Singapore or Japan, education appears to have a high status at least in part because the public at large has understood that the country must live by its human capital.

It is noteworthy that countries that have succeeded in making teaching an attractive profession have often done so not just through pay, but by raising the status of teaching, offering real career prospects, and giving teachers responsibility as professionals and leaders of reform.

2. High performing nations establish high standards and apply them to all students.

But placing a high value on teachers and education will get a country only so far if the teachers, parents and citizens of that country believe that only some subset of the nation's children can or need to achieve high standards. None of the high performing systems has managed to achieve sustained high performance without developing a system that is premised, in detail, on the proposition that it is possible for all students to achieve at high levels and necessary that they do so.

Most of the high performing countries have developed world-class academic standards for their students and their existence tends to be a consistent predictor for the overall performance of education systems. The approaches to standard-setting in countries range from defining broad educational goals up to formulating concise performance expectations in well-defined subject areas.

Most of these countries have also incorporated their standards into systems of high-quality curricula and external examinations at the secondary school level. These are used to construct clear gateways for students either into the workforce and good jobs or to the next stage of education or both.

Whatever the approach, such standards shape high-performing education systems by establishing rigorous, focused and coherent content at all grade levels; reducing overlap in curricula across grades; reducing variation in implemented curricula across classrooms; facilitating co-ordination of various policy drivers, ranging from curricula to teacher training; and reducing inequity in curricula across socio-economic groups.

The establishment, by states, of “common core standards” in the United States follows a similar line of reasoning, with the potential to address the current problem of widely discrepant state standards and assessment cut scores that have led to non-comparable results.

- 3. Only Luxembourg spends more money per capita on its students than the U.S., both persistently less-than-stellar performers, and U.S. spending patterns vary widely from those of more successful education countries.*

PISA results show that the amount of money a nation or state spends on education, while important, is not a decisive factor in achieving high scores on the assessments. A healthy GDP influences educational success, but only explains 6 percent of the difference in average student PISA performance.

Despite spending more money per student than other countries, neither Luxembourg nor the U.S. have managed to break into the ranks of top PISA performers. The U.S. hovers in the middle ranks, along with countries such as Estonia and Poland, each of which spend half as much per student as the U.S. At the same time students from Luxembourg, which spends the most money per student, achieve significantly lower scores than the U.S., ranking below the OECD average in every category.

New Zealand, on the other hand, one of the highest performing OECD countries, spends well below the OECD average, while number-one ranking Shanghai, with top scores in every category, illustrates forcefully what can be achieved with moderate economic resources in a diverse social context.

The U.S. also spends its money differently than the most successful PISA performing nations. It is one of only four OECD countries that appears to spend less money per student (based on teacher/student ratios) in its economically disadvantaged schools, while spending more in richer districts.

In about half of OECD countries, disadvantaged schools tend to have a lower teacher/student ratio, on the assumption that children from less economically advantaged neighborhoods and cultures should have more and better teachers. High-performing Singapore, for example, sends its best teachers to work with students who are having the most difficulty. That pattern is reversed in the U.S., Israel, Slovenia and Turkey – the only four OECD countries to favor their economically advantaged schools with more teachers on a statistically significant basis.

In the U.S., this is partly due to the fact school systems are locally financed with tax rates based on the value of local homes and businesses. This allows people who are better off financially to form a school taxing district that can raise more money for hiring the best teachers and providing other highly funded resources.

It is interesting to note that Canada, which has become a top PISA performer, had a financing system similar to that of the U.S. until a few years ago. It has since been abandoning that system in favor of shifting funding entirely or almost entirely to the provinces. It would be politically and structurally difficult to make the same transition in the U.S., but it is even more difficult to see how the United States can succeed in matching the performance of the

world's highest-performing countries unless it levels the playing field for its most economically disadvantaged students. This is due, in large measure, to factor number four.

4. *Socio-Economic differences play a particularly strong role in U.S. results.*

Seventeen percent of the variation in U.S. student performance on the 2009 PISA assessments can be explained by a student's socio-economic background, a far higher percentage than the OECD average. In Canada or Japan, for example, only 9 percent of a student's score is influenced by socio-economic differences.

What this means is that two U.S. students from different socio-economic backgrounds will vary much more in their learning outcomes than is normally the case in OECD countries. Only Hungary, Belgium, Turkey, Luxembourg, Chile and Germany among the 33 other OECD countries show a larger impact of socio-economic background on reading performance than the United States.

The United States does not have a more disadvantaged socio-economic student population than the OECD average country but the socio-economic differences that do exist among students in the U.S. translate into a particularly strong impact on student learning outcomes.

At the same time, it is important to point out that socio-economic factors are far from deterministic, particularly in the U.S.. Some of the most disadvantaged schools in the U.S., from a socio-economic standpoint, match the results we see in Finland, one of the best performing educational systems in the world. And 25 percent of 15 year-olds attending economically disadvantaged schools in the U.S. achieve the average scores earned by Finnish students who are the same age.

Positive factors working in favor of the U.S. when it comes to education include:

- U.S. parents tend to be better-educated than parents in many OECD countries;
- U.S. students score comparatively well at the higher levels of reading proficiency –
 - Δ Nearly twice as many 15 year-olds score at the highest reading level of six (1.5 percent) compared with the OECD average (0.8 percent), and
 - Δ Ten percent score at level five in reading (above average), compared with a 7.6 percent average across all OECD countries; and
- U.S. scores in science are respectable if not outstanding, and improving --
 - Δ With 1 percent achieving level six and 9 percent level five, and
 - Δ The overall average science score of 502 a definite and statistically significant improvement over the 2006 U.S. score of 489;

It is principally in math where U.S. student scores appear consistently lackluster, particularly when compared with the highest performing countries. Only two percent of U.S. 15 year-olds reach a level six in math, compared with a 3 percent OECD average, and an astounding 27 percent level six rate was achieved by students in Shanghai-China in 2009.

In addition, while a respectable ten percent of U.S. student earned an “above-average” five in math in 2009, nearly fifty percent of students in Shanghai did – challenging the definition of the phrase “above average” for the students of that exceptionally high-performing system.

What Are The Best-Performing Systems Doing Right? A Personal View

During the early years of new Millennium, co-author Dr. Steven Paine traveled to observe first-hand the educational systems of Finland, Singapore and Ontario, Canada, to learn what he could from direct observation of what these education authorities were doing to achieve such strong outcomes.

The major difference, he noted, between those systems and the one in the U.S. had to do with how teachers are valued, trained and compensated. All three systems pay very careful attention to raising and maintaining the standards of the teaching profession, only accepting the very best candidates and expending substantial amounts of time and money to nurture and develop the talents and leadership abilities of teachers and principals.

1. Finland

Finland regularly tops global comparisons of national performance,^{xii} and in 2010 was ranked Number One in a *Newsweek* magazine survey of “The World’s Best Countries” – not only in educational achievement – but in the areas of health, economic dynamism, political environment and quality of life.^{xiii}

In Finland, it is a tremendous honor to be a teacher, and teachers are afforded a status comparable to what doctors, lawyers and other highly regarded professionals enjoy in the U.S.; only one out of every ten applicants makes it into the Finnish training pool for teachers.^{xiv}

Despite their high status, teachers in Finland are not paid much more than teachers are in the U.S., on a comparative basis keyed to per capita GDP, but they do enjoy tremendous respect and regard from both the general public and their nation’s political leaders.

“I asked one young teacher in Finland, ‘what made you want to be a teacher,’” Dr. Paine recalled. “He replied, ‘because it is the most honorable of all professions; it is a patriotic, national calling to be a teacher.’”

Finnish teachers take great care to protect and maintain the status of their profession. They regularly stay after school, uncompensated, to work together on each other's professional development and, in general, set their own performance standards.

The Finnish government establishes some achievement guidelines, but as a general rule there are few attempts to enforce performance, nor are many measures taken to ensure accountability. Government education leaders trust their teachers to do their jobs well. Precisely because Finnish teachers enjoy that level of trust from education officials, they accept the responsibility and reciprocate by excelling in the classroom every day.

2. Singapore

The island, city-state Republic of Singapore boasts a diverse population; 43 percent of the island's five million inhabitants are foreign born.^{xv}

As with Finland, the teaching profession in Singapore is a competitive and highly selective one that works hard to build its own sense of professional conduct and meet high standards for skills development. Singapore carefully selects young people from the top one-third of the secondary school graduating class whom the government is especially interested in attracting to teaching and offers them a monthly stipend, while still in school, that is competitive with the monthly salary for fresh graduates in other fields. In exchange, these teachers must commit to teaching for at least three years.

Dr. Paine remembers, "Because they do so exceptionally well in math, I asked one math teacher who was responsible for creating the curriculum in Singapore. She replied that it was very similar to one used in the U.S. – the curriculum promoted by our own National Council of Teachers of Mathematics. "We use the same instructional theories for math that you do in the States," she told me.

"So then why," I asked her, "do your students perform so much better than ours if we're using the same theories?" She replied: "We actually apply them."

3. Ontario, Canada

An interesting fact about high-performing Ontario, Canada is that the teachers there are heavily unionized. In fact, every teacher is required to join the union, which is as strong and as fiercely protective of teachers' rights as any union in the U.S.

But in Ontario, they have shown that a strong teachers union is not inimical to successful education reform.

"In 2003," Dr. Paine recounts, "the Ontario Premiere and his staff sat down with the teachers union, the Ministry of Education and other educational stakeholders and said 'let's see if we can establish some common goals.'"

The government and the union agreed that everyone wanted to see student achievement go up, that it would be in everyone's interests to create a rich culture of teacher support and to promote exceptional leadership throughout the system.

All sides hammered out an agreement that set its sights on 75 percent of all students reaching a certain performance level by the end of four years. In return for teachers and principals agreeing to work towards that goal, the province agreed that it would supply an unprecedented level of support and professional development for prospective and successful teachers throughout the Ontario system, plus a leadership development program that would reward and promote the best principals.

In sum, the educators, through their union, agreed to accept responsibility for their own learning and the learning of their students; the government agreed to supply all of the necessary support. As a result, Ontario's students went from near the bottom of the PISA achievement levels to the top.

When asked how they did it, one of the union leaders said, "It's because of the trust and respect the government gave us. We care about the kids as much as anyone in the Ministry of Education. And once our professional standing improved we became protective of it. We don't want bad teachers in the profession either, so we police ourselves."

This is what needs to happen in the U.S. if the nation is going to break out of the pack and join the ranks of the highest-performing PISA nations at the top of the achievement scale.

Lessons for the U.S.

The most important lesson the U.S. can take from the countries that have been most successful in achieving high PISA scores for their students is to begin investing in the preparation and development of high-quality teachers, while at the same time taking steps to elevate the status of the entire profession to a higher level of respect and regard.

The challenge will be to equip all U.S. teachers for effective learning in the 21st century. This will require rethinking many of the methods currently in use in the U.S. for preparing and developing teachers, including:

- How to optimize the pool of individuals from which teacher candidates are drawn;
- New guidelines for recruiting and selecting staff;
- Improving the level of initial education recruits obtain before they start their job;
- How teachers are monitored and inducted into their service;

- The kinds and level of continuing education and support they get;
- How their compensation is structured; and
- How the performance of struggling teachers can be improved and the best performing teachers given opportunities to acquire more status and responsibility.

In many of the best performing OECD countries, teachers can move up and earn higher salaries earlier in their careers by becoming teaching supervisors. These are outstanding teachers who have proven themselves to be more effective in the classroom than most of their peers; they are compensated for taking on a mentoring and development role with both a higher rank and additional salary.

Teaching education programs in high-performing nations tend to be more selective and more rigorous than in the U.S. Trainee teachers in the U.S. also need to spend more hands-on time in the classroom getting real-world experience – another strategy employed by the most successful OECD countries.

The U.S. must restore the teaching profession to the level of respect and dignity it enjoyed only a few decades ago. This will not be easy, particularly in the current economic environment with states and localities strapped for funds. But improving the regard with which teachers are held is not principally about how much they are paid.

As noted earlier, the OECD countries that have been most successful in making teaching an attractive profession have often done so by offering teachers real career prospects and more responsibility as professionals – encouraging them to become leaders of educational reform. This requires teacher education that helps teachers to become innovators and researchers in education, not just deliverers of the curriculum.

Some of the responsibility for raising the tone of the profession is up to teachers themselves. They must be willing to step up and be responsible for their own learning and the learning of their students, to focus more on their own ongoing professional development and skills, to seek out mentors and provide mentoring to new teachers coming into the profession.

But it is also incumbent upon political leaders, our state and federal education officials, parents and everyone with a stake in the education of young people in the U.S. to support their teachers.

Other important lessons the U.S. can take from high-performing countries include:

1. *Establishing and Implementing Rigorous, Focused and Coherent Educational Standards.*

The current move by a consortium of states in the U.S. to establish “common core” educational standards for the entire nation is a very important step, as high-stakes national standards are an important predictor for the success of an education system. Led from the ground up by state and local education officials, it has already come a far way towards national acceptance in a relatively very short amount of time.

In 2009, governors and state commissioners of education from 48 states in the U.S., plus two territories, and the District of Columbia, worked in collaboration with education experts, teachers, school administrators, and parents to develop a set of common core of state standards for English-language arts and mathematics for grades K-12. As of this writing, approximately 40 states, the District of Columbia and the U.S. Virgin Islands have adopted the standards.

Once fully accepted and implemented by all of U.S. states and territories, the common core standards could address the current problem of widely discrepant state standards in the U.S. which led to egregiously non-comparable results.

Currently, because of the way education has been traditionally organized in the U.S., there is no way for an employer in Ohio – or Dubai – to know what it means that a prospective employee has a high-school diploma from South Carolina or North Dakota. Once the common core standards have been implemented across the U.S., they will.

2. Develop Leaders at the Local and School Level

The example of Ontario, Canada, in particular, shows the positive results that follow a concerted effort to raise leadership throughout the system.

In 2008 the government initiated the Ontario Leadership Strategy that spells out the skills, knowledge and attributes of effective leaders. Among the elements of the strategy are a strong mentoring program that has now reached over 4,500 principals and vice-principals, and a new province-wide appraisal program for school leaders.

Singapore employs a method of leadership development much different than the one employed in the U.S. or Great Britain. In the US, a teacher self-selects and asks to train as a principal, receives that training, then applies for a leadership position. This is the “train then select” model. In Singapore, they select first, then train.

Potential principals in Singapore are selected from among exceptional teachers each year for interviews and put through leadership situational exercises. Approximately 35 candidates a year are then chosen from among this initial pool for six months of executive leadership training at the National Institute of Education. The process is comprehensive and intensive, including an international study trip and a project on school innovation. Salaries continued to be paid during the training period.

3. Establish Ongoing, Summative Assessment and Intervention

One factor often cited to explain the ability of Finnish schools to produce high achievement with so little variation between or within schools is the heavy emphasis the Finnish system places on early diagnosis, assessment and intervention.

While the Finns do not assess primarily for school accountability purposes, as is the case in the U.S., they do an enormous amount of ongoing formative assessment at the student and classroom levels. One principal, when asked how she knows how well the students in any particular class are learning, answered that “there is so much assessment data at my disposal, that there is no way I would not know if a teacher was failing to teach the students.”^{xvi}

4. Invest Resources Closer to the Action

One might assume that schools in the United States, with its tradition of local control, have more autonomy than schools in other countries. But that is not the case, because U.S. schools, at least in the cities and most suburbs, get much more direction from the local district central office than is typically the case in other, top-performing nations.

Many of the best-performing countries have had education systems far more centralized, bureaucratic and controlling than the United States has ever had, but most of those countries have rebalanced their systems to provide more discretion to school heads and school faculties.

Finland and Ontario provide examples of how formerly centralized systems have shifted emphasis towards improving the act of teaching by: Giving careful and detailed attention to implementation, along with opportunities for teachers to practice new ideas and learn from their colleagues; developing an integrated strategy and set of expectations for both teachers and students; and securing support from teachers for the reforms.

The Finnish system of accountability is entirely built from the bottom up. Teacher candidates are selected in part based on their capacity to convey their belief in the core mission of public education in Finland. The next level of accountability rests with the school. While every comprehensive school in Finland reports to a municipal authority, the day-to-day responsibility for managing the schools is left to the professionals, as is the responsibility for assuring student progress. Again, the level of trust that the larger community extends to its schools seems to engender a strong sense of collective responsibility on the part of everyone in the system at all levels for the success of every student.

Pushing responsibility for achievement down is also the direction which Japan and other Asian countries are moving towards.

Conclusion

The U.S. has the resources and the talent to compete more effectively and raise its level of educational achievement. But only if it demonstrates with its actions that it truly values education, displays an understanding of the vital importance of having an educated workforce that can compete globally, and develops the political will to devote the necessary resources for educational reform.

Despite its economic inequality and the shortcomings in its education system, the U.S. remains a role model for much of the world in terms of creative energy, freedom and innovation.

There are many things the U.S. can learn from countries that have raised their educational achievement levels over the past two decades. And there are things in which the U.S. instructs the world when it comes to education.

But as the examples set in the best-performing PISA nations show so decisively, the U.S. needs great teachers to once again be a great nation when it comes to educational development and achievement, and must do its best to both develop exceptional teachers and raise the level of professional regard in which the job of teacher is held by the public and officials.

In a 2008 speech that then-presidential candidate Barack Obama delivered in Flint Michigan – one of the American cities hit hardest by jobs sent overseas and diminished economic prospects – he said “We need to recruit an army of new teachers,” and made the following pledge to any young, potential teachers who might have been listening:

If you commit your life to teaching, America will pay for your college education. We'll recruit teachers in math and science, and deploy them to under-staffed school districts in our inner cities and rural America. We'll expand mentoring programs that pair experienced teachers with new recruits. And when our teachers succeed, I won't just talk about how great they are – I'll reward their greatness with better pay and more support.

Now everyone in the U.S. who cares about the nation's economic future needs to come together and work to help make that plan a reality.

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ⁱ *New York Times*, December 7, 2010, Top Test Scores From Shanghai Stun Educators

ⁱⁱ Claudia Goldin and Lawrence Katz, “Human Capital and Social Capital: The Rise of Secondary Schooling in America, 1910–1940,” *Journal of Interdisciplinary History* 29 (1999): 683–723.

ⁱⁱⁱ Goldin, Claudia, “The Human Capital Century and American Leadership: Virtues of the Past,” Department of Economics Harvard University and National Bureau of Economic Research, 2001, p. 4.

^{iv} Claudia Goldin and Lawrence Katz, “Human Capital and Social Capital: The Rise of Secondary Schooling in America, 1910–1940,” Ibid

^v Shawn Fremstad and Andy Van Kleunen, “Redefining Public Education for the 21st Century: Toward a Federal Guarantee of Education and Training for America’s Workers,” *Clearinghouse REVIEW Journal of Poverty Law and Policy*, May–June 2006.

^{vi} *The High Cost of Low Educational Performance*, OECD, 2010

^{vii} *How the World’s Most Improved School Systems Keep Getting Better*, a report McKinsey & Company - http://www.mckinsey.com/clientservice/Social_Sector/our_practices/Education/Knowledge_Highlights/How%20School%20Systems%20Get%20Better.aspx

^{viii} *The Washington Post*, May 9, 2006, “Half of Teachers Quit in 5 Years”

^{ix} *Education at a Glance*, OECD, 2010

^x <http://www.nea.org/home/12661.htm>

^{xi} *Strong Performers and Successful Reformers in Education: Lessons from PISA for the United States* <http://dx.doi.org/10.1787/9789264096660-en>). OECD 2010

^{xii} ["Finland: World Audit Democracy Profile"](#). *WorldAudit.org*. Retrieved 2007-06-11.

^{xiii} ["The World's Best Countries. A Newsweek study of health, education, economy, and politics ranks the globe's top nations, Newsweek, Aug 2010"](#). *Newsweek.com*. 2010-08-16. Retrieved 2010-08-26.

^{xiv} The admissions process occurs in two stages. The initial screen is based on the applicant’s Matriculation Exam score, upper secondary school record, and out-of-school accomplishments. Those who pass that then take a written exam, are observed in a teaching-like activity in which their interaction and communication skills can be assessed, and are interviewed to assess, among other things, the strength of their motivation to teach (for details see OECD [2010], *Strong Performers and Successful Reformers – Lessons from PISA for the United States*, OECD Publishing, Paris).

^{xv} ["Trends in international migrant stock: The 2008 revision"](#), United Nations, Department of Economic and Social Affairs, Population Division (2009).

^{xvi} *Strong Performers and Successful Reformers in Education: Lessons from PISA for the United States*, OECD, 2010