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“Educating America’s Youth for Success in the Global Arena” was the theme of the 2011 conference sponsored by The Aspen Institute Congressional Program, held August 15-19 in Alberta, Canada. The meeting was the 18th in a series that examines policy options for promoting the education and well-being of American youth, and thus the well-being of the nation. A bipartisan group of 15 members from both houses of Congress participated, together with 10 invited experts with relevant knowledge and experience. The Congressional Program series is not intended to yield a consensus statement of recommended policy directions. Rather, the aim is to help inform policymakers and facilitate the search for common ground on which effective American legislative policy must rest. The 2011 conference examined current challenges in K-12 and postsecondary education, the relationship of these problems to the nation’s economic well being in a global age, and policy options for leveraging change.

Stuck in the slow lane?—lagging student achievement and workplace skills

Over the last decade Americans have seen relentless attrition in the number of jobs—particularly good-paying jobs—that are obtainable with only a high school diploma. In 1973 only 28 percent of jobs required postsecondary education and training, but by 2007 the proportion had risen to 59 percent and is headed upward. Yet, skill levels and postsecondary education in the American workforce lag, while a number of other countries are outstripping the United States in production of college graduates and skilled workers.

Moreover, U.S. demographic trends intensify the problems resulting from poverty and inadequate and inequitable K-12 schooling. The population groups growing most rapidly—Latino and African American—are those with the most dropouts and the lowest rates of high school and college graduation. Nor has significant narrowing occurred in the disparities in college entrance or completion between demographic groups. To return to a leading place in student learning outcomes and college completion—and the robust economy that depends on such achievement—the United States must do a far better job of educating its students, including the most disadvantaged youth, and must rise to the challenge of teaching 21st century skills. In the adult population as well, many workers will need additional education and training if they are to meet changing job requirements and thus enable the nation to maintain a strong economy with a vigorous middle class and low unemployment.

The nation faces an urgent need to redesign our K-12 schools and postsecondary education clearly in a world fundamentally transformed by technological advances, the knowledge revolution, and a global economy. In the 21st century workplace, increasingly vital capabilities include critical thinking and problem solving, informa-
tion and communication skills, and a range of interpersonal abilities. Of course learning in domains such as mathematics, literacy, science, and social studies remains critical. But with facts now instantly accessible through the internet, mere recall of information does not occupy the central place that it has in the past. What is essential is applying such knowledge to solve problems. Of growing importance too is global awareness, which is currently quite low among many Americans, including young people, who will need a higher degree of such awareness to function well in a global economy.

**Raising the bar and closing the gap**

Teachers and principals want to advance student learning, yet a great many are drastically underperforming in the present system. For this to change, policymakers and educators at all levels will need to own up to the real state of affairs in education. On paper, states and districts may show progress in improving student outcomes, but according to independent measures, notably the National Assessment of Educational Progress, most states remain stagnant in actual student achievement. The No Child Left Behind legislation demanded accountability for the performance of all students but allowed states to set their own standards and use their own tests. Unfortunately, many of them chose to set their standards low, “dumbed down” their tests, and manipulated statistics to make their schools appear better than they really are.

In breaking through this façade to raise the achievement of American students to where it needs to be, the recent emergence of common standards for U.S. students is a critical step. The Common Core of Standards, developed with the leadership of the National Governors Association and the Council of Chief State School Officers, has been adopted by 45 states to date. Clearer, higher, and fewer than the existing muddle of state standards, the common core offers major opportunities for advancing the quality and coherence of education across the nation. States will be able to learn from one another and achieve cost savings in the design of the next generation of curriculum, textbooks, and assessments geared to the common standards. Better focused teacher preparation and professional development will be possible. And most importantly, the standards reflect the kinds of thinking and learning that workers need now and in the future.

Despite their potential for bringing positive change, the common standards are not a panacea for what ails education in the United States; other major changes are imperative. As a nation and at state and district levels, we need a “North Star,” that is, a clear vision of what we are aiming for, and a coherent plan for achieving it. Fortunately, research and experience point to a set of essentials that this vision should include. For starters, evidence suggests that we should:

- Respect teachers, principals, unions, parents, students, and other players in the education enterprise, not casting blame but recognizing that all stakeholders want positive education outcomes and reaching out to bring them on board;
- Redirect resources to the early years and build a strong foundation for all children from pre-K through grade 6 and beyond;
- Using the common standards as a framework, create high-quality curriculum that progresses in a coherent way from pre-K through high school and links to postsecondary education;
- Create and make available improved assessments designed to inform teachers about their students’ progress and help them tailor instruction to student needs;
- Ensure that high schools provide multiple avenues that all lead to solid futures; for instance, coursework in which learning is explicitly linked to a specific occupational path as well as coursework for those pursuing academic disciplines;
• Invest in data systems to link K-12 and postsecondary education systems in order to track outcomes; and

• Foster strong relationships between schools, families, and communities to build support for the schools and children’s learning and healthy development.

While each school district has its own issues and strengths, the above components are found repeatedly in effective education systems. Together they constitute the essentials of the vision of the schools we need. To build and sustain such a system will require judicious deployment of resources in states and districts and crafting of federal policies to leverage such resource use.

Using resources to maximum benefit

In an era of limited resources, wise resource use is especially crucial. Plotting a course to significantly reallocate resources requires a clear map. Many structures and practices prevalent in school systems no longer match our current workforce expectations, which include higher salary levels, flexibility, a sense of ownership, and collaboration with colleagues. Outdated structures also fail to support opportunities to use technology, which can dramatically increase quality and, if intelligently integrated, reduce costs. And more sophisticated ways of assessing learning outcomes create unprecedented opportunities to adapt earning to diverse student needs and strengths.

Building on the impact of the Race to the Top initiative in encouraging states to embrace the common core standards and build new teacher evaluation systems, federal lawmakers could make a portion of resources contingent on states implementing substantial changes to regulations, contracts, and practices. Possible strategies include:

• Productivity challenge grants to help with transition costs so that states and districts can make changes with respect to salary and workforce transitions, teacher evaluation training, and acquiring technology to free teachers from less skilled roles and routines to spend more time in instruction, planning, and professional development.

• Incentives for school systems to reshape the teaching role, including how they hire, train, support, compensate, and promote teachers, to encourage and reward teacher effectiveness, collaboration, and professional growth.

• Support for early education through actions such as funding pre-K capital investments to equip elementary buildings. Another option is to give schools that direct funds to pre-K an additional Title I allocation, at least for a transition period during which cost savings will accrue with reduction of grade repetition and special education referrals.

In efforts to improve use of education resources, federal policies will be useful if they provide the flexibility and incentives for districts to (1) revamp one-size-fits-all job structure and teacher compensation (for example, offering differential compensation for math and science teachers to fill shortages); (2) restructure time and organization for optimal teaching and learning; and (3) instead of standardized class size across the school day, make use of varying learning formats, such as individual and small group work, for distinct purposes.

High school graduation does not equal college readiness

Not only do many high school graduates presently fail to reach a college-ready level of achievement, but also expectations for students entering higher education vary widely and are often unclear. In the past, the lack of connection between secondary and postsecondary education was a less serious problem, but it became critical with escalation of workforce demands and individual expectations. Currently, over two-thirds of high school graduates go on immediately to some form of postsecondary educa-
tion, and three-fourths do so within five years of graduation. In light of international trends, many argue that these proportions need to climb still higher in the United States for our economy to hold its own. Thus all students must enter college far better prepared than they now are and postsecondary institutions need to confront a number of persistent problems. Further, the disconnect between K-12 and postsecondary education—arguably the most significant barrier to the college and career aspirations of American youth—must be addressed.

Promise and problems in postsecondary education

A large and growing part of the postsecondary picture, community colleges serve nearly half of all American undergraduates enrolled in college over the course of a year. With their responsiveness to workplace needs, low tuition, and policy of open admissions to anyone with a high school diploma or equivalent, community colleges are a key engine in workforce preparation and in offering broad access to postsecondary education. In comparison to four-year institutions, community colleges serve substantially higher percentages of ethnic minorities and students who are the first generation in their families to attend college, while at present graduation rates are far too low. But for students who attend community college, subsequent unemployment is lower. Also, community college students, especially those who graduate, generally get higher-paying and more secure jobs than those with only a high school diploma.

Further, community colleges help their regions and communities to develop their economies by upgrading the skills of the local labor force through education and training of both recent high school graduates and older students. In responding to workforce needs, especially those of their localities, community colleges are more agile in developing and modifying programs than are four-year institutions and thus able to produce faster results.

Finally, community colleges play the role of feeder system to universities. A large percentage of students enter community colleges with the intention of transferring to four-year universities. By this route millions of low-income, minority, and less-prepared high school graduates, who would not have been able to afford to attend or get accepted by four-year universities, end up with four-year and even postgraduate degrees. With university costs rising at a staggering rate, the role of community colleges as the first step to a four-year degree appears likely to increase. To fulfill these roles effectively, however, community colleges must make significant improvements, especially with respect to students who arrive with insufficient skills.

Redesigning remediation

Over half of entering community college students are judged to be inadequately prepared for college-level work, compared to about a quarter at four-year colleges. Moreover, about two-thirds of community college students attend part-time. Since they already juggle multiple responsibilities, lengthy remediation requirements at the outset increase the risk of dropping out; students required to take remedial courses are in fact significantly less likely to graduate.

In mathematics some community colleges report remediation rates of over 80 percent. Based on a placement test, the students are required to enroll in a sequence of remedial math classes that is known as developmental mathematics. Some students must take as many as four such courses, aimed at preparing them for a college-level math course, often calculus. Unfortunately, data indicate that fewer than 15 percent of students initially assigned to developmental math education actually acquire college math credit within two years of enrollment.

College majors in science, technology, engineering, or math (STEM) need calculus, but does everyone? Today many mathematicians, as well as employers, agree that this objective
does not make sense for all students. A goal that may be more reasonable is for all students to acquire at least a basic quantitative literacy, including use and application of basic arithmetic, statistics, practical analysis of data, and quantitative reasoning to the broad array of problems people are likely to encounter in work, in personal life, and as citizens.

In addition to incorporating such changes in the content of what students must know and be able to do, community colleges may get better results when math is taught in applied ways, especially in the context of how students will use it in the given occupation for which they are training. Of course faculty will need professional development and other supports to become competent in teaching math in these new ways and, more broadly, to improve their instruction.

Research on revamping and improving remedial coursework is underway here and there, but far greater speed and scale are needed. To date, there has been very little federal support for educational R&D and other strategies focused on improving teaching and learning in community colleges. Here are several possibilities for federal action in this area:

- Encourage the formation of public-private partnership in improvement of remedial and other instruction;
- Include faculty participation in improvement networks as a targeted priority for discretionary federal support. Incent colleges to transform pay and promotion scales to reward such faculty engagement;
- Consider linking institutional eligibility for federal support to explicit accountability for student success (rather than just accountability for access and enrollment). Framed properly, this would create institutional incentives to integrate research on instructional improvement into the everyday fabric of community college life; and
- Support use of revised metrics and rules so that Pell grants, state dollars, and other funding become flexible enough to allow for innovation and provision of additional services that help students stay in school and earn a degree. Federal financial aid is now based primarily on “seat time”—how long a student attends a specific class. With greater use of technology and interactive, authentic assessment, the ability to assign financial aid based on learning becomes possible.

Taken together, these policies would constitute a post-secondary environment much more conducive to accelerating our learning from practice to improvement.

Funding in the postsecondary world

Despite the multiple roles community colleges fulfill and the fact that they serve about half of all U.S. undergraduates each year, they receive only 20 percent of federal funding. This low proportion is largely the result of Pell grants being based on tuition and community colleges charging far less than four-year institutions or for-profits do. In fact, of the top 10 recipients in the U.S. of federal Pell dollars, seven are for-profit colleges. Further, students at for-profit colleges are very likely to supplement financial aid with loans backed by the federal government. Thus, for-profit colleges derive just under 80 percent of their income from the federal government. Though for-profit colleges enroll about 10 percent of the nation’s college students, they get about 25 percent of all federal student-aid disbursements. To remedy this imbalance, Congress could stop linking Pell dollars to tuition. With removal of this link, Pell funding would no longer reward institutions that increase tuition year after year.

Holding for-profits accountable

Apart from their heavy marketing, for-profit institutions have seen rapid growth in part because they allow students to begin courses without remediation requirements and, in many cases, offer more immediate availability of courses. In contrast, demand has outpaced
capacity in many community colleges, and students may have to wait a semester or more for the courses they need. However, for-profit colleges have strikingly low graduation rates. For example, the for-profit University of Phoenix in Kansas City graduated just under nine percent in contrast to the 42.5 percent graduation rate at the University of Missouri, Kansas City. Given that for-profits spend a fraction of what public and not-for-profit institutions spend on instruction, their low graduation rate is not surprising.

Another concern about for-profit colleges is that a great many of their students accumulate substantial debt. Twenty-five percent of for-profit bachelor degree recipients have college debt of more than $40,000, compared to only six percent of public graduates. Moreover, the loans are largely federally-underwritten, and students attending for-profits have a very high percentage of loan defaults. The low graduation rate, along with high costs, has led to efforts to hold for-profits accountable, including recent Education Department regulations requiring that they prepare their students for “gainful employment.” The debate on appropriate federal responses to the for-profits is likely to continue.

* * *

In the course of the wide-ranging discussion throughout the conference, broad support emerged for several potential actions at the federal level. These include:

- Invest in **data systems** to link K-12 and postsecondary education systems to enable next-generation accountability systems to track outcomes and support implementation of common core standards.

- Support higher-quality, integrated **assessments** linked to inform teachers about their students’ progress and help them provide individualized instruction to student needs (and also enable technology-supported professional development).

- Invest in **pre-K**. For example, lawmakers might include expanded spending on pre-K in the jobs bill as well as increase use of Title I for pre-K. Another option is to incentivize use of the Individuals with Disabilities Education Act (IDEA) funds for early intervention education services for 3- and 4-year-olds.

- Repurpose funds to enable using time, money, and technology to support coherent **pathways from middle school to high school to college and careers**.

- Alter the **Pell program** so that grants are not based on tuition, a policy that has disadvantaged community colleges with their low tuition levels.

- Invest in a new type of **second chance** opportunity structure with community colleges at the core as well as incentives for new models of remediation and acceleration in literacy and math that integrate with career pathways.
Preamble

In countries across the globe, from the Caribbean to Singapore, there is a chorus of voices demanding improvement in the quality of education. Leaders from industry, business and labour as well as policy makers and parents, are asking their governments to ensure increasing success for all students, regardless of background or personal circumstances. Demands for greater accountability in our investment in education are reverberating as politicians make promises to constituents to bring about urgent change.

While extolling the virtues of a good education, it is also important to recognize the impact of its absence. Many years ago, Henry Levin (1972) identified in a report to Congress the cost to a nation of inadequate education:

- foregone national income
- foregone tax revenues for the support of government services
- increased demand for social services
- increased crime
- reduced political participation
- reduced intergovernmental mobility
- poorer levels of health

Numerous reports since then have shown that investment in education improves psychological, social and economic conditions, not just for individuals but for society as a whole (e.g., Wilkinson & Pickett, 2009). Additionally, research has shown that the challenge to improve education outcomes is achievable in a relatively short period of time. We now know that we can, through targeted efforts and innovative programs, raise the bar for all students and close the achievement gaps once thought to be intractable.

The Ontario Example

In 2007, based on comparative assessments of student achievement on international tests, Ontario was ranked as one of the top ten high-performing school systems in the world (Barber & Mourshed, 2007). In 2010, the researchers conducted a follow-up study which showed that Ontario, along with four other jurisdictions (Singapore, Hong Kong, South Korea and Saxony, Germany), was able to sustain the gains it had made to improve student success. Ontario was identified as a “great system” (Mourshed, Chijioke & Barber, 2010). According to the Organisation for Economic Co-operation and Development, Ontario is considered across the world as one of the fastest improving systems. What makes Ontario such an exciting international example is that not too long ago it was considered by many to be a system in crisis. Now it is seen as one of the few jurisdictions that continue to demonstrate that excellence and equity can go hand in hand.
This paper provides an overview of the Ontario improvement strategy as a way of illuminating what might work in other jurisdictions. Specifically, it seeks to answer three questions:

1. Are there policies and strategies that Canada is using, both in common with many other high-achieving countries and unique to Canada, that are applicable to the U.S.?

2. Are there innovations on the horizon that are especially promising?

3. What policies have been put in place to educate Ontario’s immigrant populations?

Background

Canada is one of the few countries in the industrialized world without a national department of education; there are, rather, 13 different education systems for each of the provinces and territories. Some aspects of education governance are, however, determined centrally. For example, the Indian Act gives the federal government responsibility for Aboriginal education on reserves, while the Constitution protects the rights of minorities. Catholics are considered a minority under the Constitution with the right to operate their own publicly-funded education system. The Constitution also protects minorities of the two official languages, English and French, to operate English and French language district school boards.

Ontario, with over 1 million square kilometres of land, is the home of 40% of Canada’s 33.6 million people. It is certainly the most populous province in Canada and is the most diverse, home to 60% of the 225,000 immigrants who come to Canada annually. Ontario has 2.1 million students in four provincially operated education governance systems: English public, English Catholic, French public, French Catholic.

Approximately 1.4 million students attend Ontario’s 4,000 elementary schools and approximately 700,000 attend more than 850 secondary schools. The 2006 Statistics Canada census indicates that 28.3% of Ontario’s population are immigrants with 4.8% arriving in the last five years. As well, 22.8% of Ontario’s population are visible minorities. In United States terms, Ontario has the population of Illinois, Pennsylvania or Ohio, your 5th, 6th and 7th most populous states.

There are approximately 126,000 unionized teaching and support staff, in approximately 5,000 schools in 72 school districts and 30 school authorities. School boards range widely in size and geography from a few hundred students in rural and remote areas to large urban districts such as the Toronto District School Board with 250,000 students or 18% of the total student population. As well, there are six school sites for deaf, blind and severely learning-disabled students run directly by the provincial ministry of education.

Turning the System Around

In 2003, when Ontario’s current premier, Dalton McGuinty, came into office, he inherited a broken system. Labour unrest and tension-filled relationships between the provincial government and Ontario educators led to the erosion of confidence in the public system and low morale among teachers. The times were described as turbulent, at best. Many educators felt that there was a climate of fear and resentment, with teachers experiencing a range of emotions—from anger to despair. Many chose to retire as soon as they possibly could. Fewer individuals wanted to become teachers or to assume leadership positions. Not surprisingly, student achievement had flat-lined and enrollment in private schools was on the rise. From all accounts, the system was in a state of crisis.

Premier McGuinty, working closely with his then education minister Gerard Kennedy, made improvement in publicly funded education the centerpiece of the government’s mandate. The first step in realizing excellence was to require that every elementary student develop effective skills in reading, writing and mathematics by Grade 6 (about age 12). They
also set a provincial standard—that 75% of Ontario students should, with the right supports, be able to achieve level 3 (equivalent to a B) on provincial assessments in these areas. A provincial standard was also set for high school graduation. The expectation was that, with adequate programming and support, 85% of Ontario students would graduate from high school. Then with consultation of leading researchers, policy makers and practitioners, a strategy was developed with tight timelines and with the following key components:

1. A small number of ambitious goals
2. A “Guiding Coalition” including the Premier and the Minister, to monitor and support change
3. A respected educator with experience at all levels of the system as “Champion” of the initiative
4. High standards and expectations, with a focus on both excellence and equity
5. Investment in capacity-building at all levels, with an emphasis on instructional effectiveness
6. Investment in leadership development
7. The use of high impact strategies to improve achievement
8. The use of data and enhanced assessment to improve practice
9. The implementation of non-punitive intervention strategies to improve low performing schools
10. Paying attention to the distracters, such as collective agreements and unnecessary bureaucracy to protect the focus on the core priorities

I had the distinct honor of being appointed by the government as Ontario’s first Chief Student Achievement Officer and CEO of the Literacy and Numeracy Secretariat. My mandate was to establish the Secretariat to drive change and achieve results with a sense of urgency.

Ontario has been able to achieve excellent results without punitive measures or the ranking of schools. We have created conditions to ensure that people develop the capacity and the motivation required to deliver on the education agenda. In Ontario, teachers and principals now feel that they have the skill, the will and the determination to take a system to the zenith of its possibilities. And by Ontario’s own standards, progress is transparent:

- The number of students meeting or exceeding the provincial standard for Grade 6 reading, writing and mathematics has increased from 54% in 2003 to 68% in the 2009-10 school year.
- The number of elementary schools with large percentages of children achieving well below the provincial standard has decreased from 250 schools in 2006 to 126 in 2009-2010.
- Secondary school graduation rates have increased from 68% in 2004 to 79% in 2009-10, representing more than 52,000 additional students graduating from high school.
- Significant learning gains have been made by English language learners (ESL) and students with special education needs.

**Question 1**

*Are there policies and strategies that Ontario, Canada is using, both in common with many other high-achieving countries and unique to Canada, that are applicable to the U.S.?

**Promising Practices, Lessons Learned**

Internationally, there are many educational systems that are realizing great success in improving achievement for all students. McKinsey and Company studied 25 of the world’s school systems, including 10 of the highest performing; and examined characteristics that these top
performers had in common and strategies they used to improve student achievement. Three key factors were:

- Getting the right people to become teachers
- Developing them into effective instructors
- Ensuring the system is available to deliver the best possible instruction for every child

As well, they identified the following lessons learned:

- **Lesson #1**
  The quality of an educational system cannot exceed the quality of its teachers

- **Lesson #2**
  The only way to improve outcomes is to improve instruction

- **Lesson #3**
  High performance requires every student to succeed

- **Lesson #4**
  Great leadership at the school level is a key enabling factor

Ontario’s demographics are also similar to many jurisdictions in the United States. We also have concerns such as poverty and the educational achievement of students of minority backgrounds, including those of African, Portuguese, Somali and Spanish-speaking heritage.

**Reducing Bureaucracy to Support Schools**

The primary goal of Ontario’s Literacy and Numeracy Secretariat, established in 2003, was to work directly and collaboratively with the school districts to:

- Focus on student engagement and achievement
- Create a renewed focus on literacy and numeracy
- Improve instructional effectiveness
- Share promising practices among schools and districts
- Extend the knowledge base of the profession
- Increase capacity to support learning, and
- Engage parents, school councils, business, community members to support achievement goals

Early on, the Secretariat recognized that a “one size fits all” approach would not work. A range of strategies were implemented to recognize the diverse needs of district school boards and schools across the province. The result was improved student achievement and increased capacity for administrators, board and school staff to plan effectively for improvement and to change practice, when necessary.

These strategies included:

- Hiring a highly skilled and dedicated team of instructional leaders and curriculum specialists as “Student Achievement Officers” to provide direct support to schools and school districts
- Working with boards to set ambitious targets and develop, implement and monitor board improvement plans
- Embedding a strong research-orientation, conducting research and using research-informed strategies
- Providing a range of vehicles for capacity building (e.g., direct training, webcasts, monographs outlining high-impact strategies)
- Funding “local initiatives” that resulted in hundreds of innovative projects being implemented which now serve as a basis for sharing of successful practices
- Providing targeted interventions to the lowest achieving schools and those that have been static in their improvement through the Ontario Focused Intervention Partnership (OFIP) strategy
- Providing district boards with financial support to initiate local improvement proj-
ects that met their unique requirements, addressing the need for a “bottom up” component

- Creating a network of schools that had demonstrated continuous improvement in challenging circumstances, to facilitate lateral capacity building and to share successful practices (e.g., Schools on the Move, explained later in the text)

- Implementing character education programs based on community engagement and locally identified character attributes (e.g., respect, responsibility, honesty, fairness, empathy, courage, optimism)

- Funding tutoring programs to ensure that struggling students received additional support

- Developing a School Effectiveness Framework that outlined key components of effective schools, identified indicators of success, and encouraged the notion of professional accountability

- Creating a data analysis tool, known as “Statistical Neighbours,” to assist boards and schools in using data to improve student achievement by removing the excuses for low performance

- Developing a network of district school boards that included some of the lowest and highest achieving boards in the province to identify challenges, share successful practices and build capacity

In order to improve outcomes at the secondary school level, the ministry launched the Student Success/Learning to age 18 strategy and supported it with policy, legislation, financial and human resources. The goal was to identify innovative ways to evolve traditional high school practices to improve support for students while they were at school and to create the conditions for their successful graduation and transition to postsecondary destinations. Every school board received funding for a dedicated “Student Success Leader” and was provided with an annual budget. A new in-school role was also introduced, that of a “Student Success Teacher,” funded above the grants that school boards normally received based on the number of students enrolled. They served as advocates for students deemed to be “at risk,” to track, counsel and work on behalf of these students to optimize their chances for success. There were further investments in leadership at the classroom and student level, and the provision of varied learning opportunities for students, including co-operative education programs, Specialist High Skills Major and dual credits (high school/college).

Three themes shaped the secondary (high school) reform effort in Ontario:

1. The importance of improving skills in literacy and numeracy

2. Providing a richer menu of programs and pathways, especially for non-university bound students

3. Focusing on the individual well-being of students as a precursor to achievement

The increasing capacity of Ontario students of all backgrounds to achieve the provincial standard in reading, writing and mathematics and to graduate from high school took root in the work of the Secretariat and Student Success initiative. Both built capacity of teachers and school leaders, supported collaboration across schools and school districts and introduced powerful instructional practices through research monographs, webcasts and web conferences, and other strategies informed by the needs expressed by teachers.

**Question 2**

**Are there innovations on the horizon that are especially promising?**

In Ontario, we constructed and implemented a number of innovative strategies that were pivotal to the success achieved in the province. For improvement to happen we recognized that each district and school, especially those that
were under-performing, had unique needs that required a range of supports. We eschewed the one-size-fits-all approach to reform in order to address unique local needs.

A few of these innovations included:

- The Ontario Focused Intervention Partnership (OFIP)
- The School Effectiveness Framework
- Statistical Neighbours
- Schools on the Move
- Specialist High Skills Major
- The Leading Student Achievement Project (LSA)

Several of these innovations are explained in more detail below (website links are provided in the References and Resources section at the end of the paper).

The Ontario Focused Intervention Partnership

In order to take part in the OFIP strategy, for example, underperforming schools were asked to put in place some “non-negotiables” to drive improvement. Those included:

- Developing strategies for collaborative work at the school level and across schools
- Identifying literacy and numeracy as the initial focus and acquiring resources to implement comprehensive programs in these areas
- Establishing uninterrupted blocks of time for literacy and numeracy
- Using student achievement information to determine strengths and areas for improvement
- Utilizing common assessment strategies
- Creating a school improvement team that conducted a school self-assessment in order to examine data, identify areas requiring improvement, put in place instructional interventions and plan for next steps
- Setting ambitious achievement targets
- Developing a process to monitor regularly the growth and progress of specific students to ensure equity of outcomes
- Providing interventions for struggling students
- Implementing strategies for communicating with parents and the public
- Affirming efforts and celebrating progress

The key to success in the OFIP strategy was the consistent implementation of a few key strategies and time for staff to work together with a specific focus.

Lessons Learned

In working with these schools we learned a number of valuable lessons:

- Targeted support and focused intervention strategies work.
- Capacity building is paramount to success.
- It is important for teachers to understand what the assessment data mean in relation to classroom practice as they begin to analyse and focus on the big ideas such as “reading for meaning” expectations in order to promote high level, critical thinking.
- Staff need to have time to come together regularly for job-embedded professional learning.
- Setting high expectations for all students is critical to success.
- Setting ambitious school achievement targets raises expectations and helps achieve goals.
• Consistency in the implementation of a few high impact instructional strategies is a must.

• School staff should share in the responsibility of school improvement and the monitoring of progress.

• Parental and community engagement are essential for success.

The School Effectiveness Framework

One of the most powerful strategies and one that yielded a great deal of positive feedback from the field was the implementation of the “School Effectiveness Framework,” with its philosophy of shared commitment and collegiality and its focus on enhancing “professional accountability.” This is a tool to assist schools and boards in identifying strengths, areas that need further attention and next steps to bring about improvement. The process of school self-assessment provides a comprehensive look at schools, assists in identifying current priorities and areas to target resources and capacity building needs, and the focus required for improvement planning.

Statistical Neighbours

Ontario Statistical Neighbours (OSN) is an innovative tool that enabled us to access school programs, performance, demographics and contextual data providing a robust picture of the confluence of factors that influence achievement. Using the OSN tool we were able to examine school data such as percentage of students living in low-income households, those whose first-language was not the language of instruction and those with special education needs. Having the data allowed us to remove the excuses for low performance in schools in challenging circumstances as we were able to highlight schools with similar demographics that were demonstrating marked improvement.

Schools on the Move

In order to highlight and share successful practice the Literacy and Numeracy Secretariat (LNS) initiated a program known as Schools on the Move in 2006. Each year LNS identified schools that had made substantial progress in raising student achievement and sustaining that progress. These schools are a catalyst in demonstrating that high levels of achievement are possible in schools in low-income areas. The central theme of the program is “schools learning from other schools.” Schools that have been selected as “schools on the move” reflect the rich diversity of Ontario. To be selected as a “School on the Move,” schools must:

• Demonstrate continuous improvement in both Grades 3 and 6 test scores

• Be able to articulate the strategies used to improve student achievement

• Provide classroom evidence of progress in student achievement

• Demonstrate the implementation of research-informed strategies

School visits were also conducted in order to gather further information from parents and communities to be used in the selection process. A provincial forum is held annually to celebrate the achievements of these schools, highlight successful strategies and provide an opportunity for networking. Staff from selected schools share their experiences in a variety of ways. They present at conferences, welcome visitors to their schools, communicate on-line with colleagues across the province and visit other schools to learn from their colleagues through lateral capacity building.

Specialist High Skills Major

Improving graduation rates has been a top priority for Ontario. One of the key strategies that has received a great deal of attention is the Specialist High Skills Major. This initiative enables students to focus on a career path
while obtaining their Ontario Secondary School Diploma (OSSD). This program began in 2006 and has expanded annually. It is a specialized program that allows students to bundle courses together that focus on a specific economic sector. While completing their secondary school diploma, students are also able to earn industry certification and gain on-the-job experience. The Specialist High Skills Major program is available to students in Grades 11 and 12 who are heading to an apprenticeship, training college, university or the workplace. The program enables students to explore and refine their career goals and make informed career choices.

Some of the areas available to students in the Specialist High Skills Major program include:

- Agriculture
- Aviation/Aerospace
- Business
- Construction
- Environment
- Horticulture and Landscaping
- Information and Communications Technology

The program allows students to customize their secondary education to their skills, interests and career goals. It engages students by providing learning experiences that are practical and relevant to their future plans. Students develop valuable work skills and specialized knowledge, while making important connections in the workplace. This is just one of the many initiatives that have resulted in reducing the number of students who drop out of school producing a marked improvement in graduation rates in Ontario.

### Pathways to Education Canada

Pathways is an inner-city program that is achieving marked success in reducing the dropout rate for disadvantaged high school students. Its intent is to step up the fight against poverty by changing a culture of defeatism to a school-going culture among at-risk youth. Since this program began, the graduation rate for participating students has jumped to four in five from just one in five. This program revolves around four pillars of student success—tutoring, mentoring, coaching and financial assistance. The program also meshes with the Ontario government’s plan to build a knowledge-based economy.

### Question 3

**What policies have been put in place to educate Ontario’s immigrant populations?**

In Canada we have a rich tradition of commitment to justice and fairness. We were the first country in the world to embrace multiculturalism as an official policy and our Constitution and human rights legislation enshrines protection for those who are most vulnerable.

### Legislation Pertaining to Immigrant Students

Recognizing the importance of education, the Ontario government has established three core priorities:

- High levels of student achievement
- Reduced gaps in student achievement
- Increased public confidence in publicly funded education

An equitable, inclusive education system is fundamental to achieving these core priorities, and is recognized internationally as critical to delivering a high-quality education for all learners.

### Policies and Procedures for English Language Learners

The Ontario policy to support English language learners, formerly described as English as a Second Language, (ESL), provides a framework to ensure a consistent approach to the provision of supports and programs, while also affording flexibility to school boards to meet their local needs.
The policy assists school boards in meeting these needs by:

- Providing a definition of English language learners
- Describing effective procedures for reception, orientation, placement and programming for English language learners, in order to accelerate their acquisition of English for academic purposes
- Describing procedures for initial and ongoing assessment of English language learners and for reporting to parents
- Clarifying procedures for the identification of English language learners who are to participate in large-scale assessments
- Defining the roles and responsibilities of teachers and administrators and providing opportunities for them to develop the skills they need to support English language learners effectively
- Clarifying procedures for collecting data related to English language learners and for monitoring and tracking their progress, to support public accountability
- Describing procedures designed to support increased credit accumulation, graduation rates, and post-secondary enrollment among English language learners (“English Language Learners: ESL and ELD Programs and Services: Policies and Procedures for Ontario’s Elementary and Secondary Schools”)

Funding to Support Immigrant Students

Ontario’s curriculum requires that students develop strong English- or French-language skills. The cultural and linguistic diversity of Ontario’s population means that many students require extra help to develop proficiency in their language of instruction. These students include those who are recent immigrants to Canada and students who live in homes where the first language spoken is neither English nor French. Two components of the Language Grant provide school boards with the resources to meet the needs of these students. English-language school boards receive the English as a Second Language/English Literacy Development (ESL/ELD) component. French language boards receive the Perfectionnement du français (PDF) and the Actualisation linguistique en français (ALF) components.

Section 49.1 was added to the Ontario Education Act in 1993 to ensure that children are not denied an education because of their immigration status or that of their parents. This means that all children living in Ontario have access to public education.

Ontario’s Contribution to the Equity Discussion

The Ontario Ministry of Education released Realizing the Promise of Diversity: Ontario’s Equity and Inclusive Education Strategy in 2009. Kathleen Wynne, then Minister of Education, asked that we draw on our experience and on research that tells us that student achievement will improve when barriers to inclusion are identified and removed and when all students are respected and see themselves reflected in their learning in schools. She quoted equity advocate Professor George Dei by stressing the point that inclusion is not about bringing people into what already exists; it is about making a new space, a better space for everyone.

Ontario’s equity strategy, of which I was the co-author, highlights the need for action by articulating the tasks educators at all levels of the system must undertake to make the school system a truly equitable one. The guiding principles include meeting individual needs, identifying and eliminating barriers to achievement and involving the broader community. This strategy, which has specific actions and timelines, is currently being implemented in all Ontario schools.
Concluding Remarks

As early as 1979, Ron Edmonds, the African American Patriarch of the effective schools movement said:

“We can, whenever and wherever we choose, teach all children whose schooling is of interest to us. We already know more than we need to know to do that. Whether we do so or not will ultimately depend upon how we feel about the fact that we haven’t done so thus far.”

We have ample evidence that shows what it takes to improve student achievement. In Ontario we have found that when people have the will and the skill, and are committed to both excellence and equity, continuous improvement is possible.

In painting a picture of a preferred future, it is important to highlight what is possible. The following quote is from an inspection report by the Office for Standards in Education, Children’s Services and Skills (OFSTED) in England. It can serve as a model of a preferred future for our schools:

“Children delight in school because learning is ‘fun’. Their attitudes to learning and their behaviour are exemplary. Attendance is high. The care, guidance and support of children are exceptional and emphasize children’s emotional health. Teachers squeeze every last drop of creativity from children. The rich curriculum is packed with experiences that fully engage learners. Children with learning difficulties and/or disabilities and those who speak a language other than English receive support of the highest quality and achieve equally well. Staff create a magical place to learn where academic rigour and emotional well-being happily co-exist. The…leadership of the head teacher drives the whole school team to ‘Reach for the Stars!’”

Mumby (2007) Excerpt from an OFSTED School Inspection Report

What we do know is that there is an urgent need to build the capacity of educators to raise standards for all students and to close the gaps for those who are lagging behind. As educators, we must deliver on the promise of making every school a good school. This is possible—even in schools in the most challenging circumstances. What a privilege it is to contribute in this way to citizenship development and nation building.

Key Recommendations

At the Political Level:

1. Make a strong public statement from the highest political level as to the timeframe and the standard of educational achievement that must be realized in key subject areas, for example, language and mathematics
2. Require local school boards and superintendents to communicate to their districts these targets and improvement plans in order to build public confidence
3. Assign a most highly respected educator as champion to develop a comprehensive strategy
4. Consult with internationally recognized educational experts to ensure global comparability
5. Build consensus and create a sense of urgency among stakeholders around the need for improvement in student achievement and fully engage them in sharing the mandate
6. Provide the necessary funding to support the improvement plans

At the Educational Level:

1. Engage a highly respected, people-oriented team with literacy, numeracy and implementation expertise, to provide direct support to schools
2. Ensure that there is a curriculum based, assessment and testing system, independent of and external to the department of education, to measure and monitor progress

3. Require each school to set achievement targets with a capacity building improvement plan to achieve the goal

4. Devise a plan to ensure buy-in to an improvement strategy knowing that schools will not improve without the cooperation, will, skills and commitment of teachers and principals

5. Increase the focus on teaching and learning by:
   - Reducing the administrative workload of principals
   - Implementing a systematic, principal development program to ensure high-quality leadership

6. Develop a comprehensive, school-based program of capacity building for school staffs to embed the improvement methodologies

7. Identify and implement the research-informed, high impact strategies that have been proven to be effective in improving schools and student achievement

8. Facilitate a culture of sharing successful practices and develop networks for lateral capacity building, collaboration and learning across schools and districts

9. Unpack the lessons learned and insights gained from across the globe about what effective implementation entails and utilize them to improve student achievement

10. Develop collaboratively a process for improving instructional effectiveness

11. Allocate resources strategically to support a turnaround strategy for low-performing schools and intervention programs for under-performing students

12. Provide enrichment programs for gifted and talented students

13. Assess school effectiveness based on the correlates of effective schools

14. Strengthen opportunities for students to learn higher order, critical thinking and 21st century skills

15. Utilize Critical Friends from across the globe to challenge thinking, examine practices and provide international perspectives

16. Seize opportunities to recognize success of students and staff

References and Resources


Ontario has a range of resources to support teachers working with immigrant students:

*Many Roots: Many Voices* (www.edu.gov.on.ca)

*Supporting English Language Learners with Limited Prior Schooling* (www.edu.gov.on.ca)

*Supporting English Language Learners: A Practical Guide for Ontario Educators* (www.edu.gov.on.ca)


The Literacy and Numeracy Secretariat. June 2007. (www.edu.gov.on.ca)


Some Helpful Links:


Schools on the Move http://www.edu.gov.on.ca/eng/literacynumeracy/schoolMove.html

The Ontario Focused Intervention Partnership (OFIP) http://www.edu.gov.on.ca/eng/literacynumeracy/ofip.html


Statistical Neighbours http://www.edu.gov.on.ca/eng/literacynumeracy/osn.html

Specialist High Skills Major http://www.edu.gov.on.ca/morestudentsuccess/SHSM.asp

Pathways to Education Canada http://www.pathwaystoeducation.ca/home.html
As the United States grinds its way through a painful, halting economic recovery, one thing has become abundantly clear: the recession of 2007 continues to reshape the economy in ways that are both dramatic and permanent. Perhaps the most profound of these is the accelerating disappearance of good-paying jobs that require only a high school education or less. Many of these jobs are gone, and are not coming back. This means, of course, that an ever-growing share of the jobs that remain will be reserved for workers with some kind of postsecondary education and training.

Although the most recent recession has cast the trend under a harsh spotlight, the disappearance of opportunity for American workers with no better than a high school diploma has been going on for years. Consider: in 1973, only 28 percent of jobs required postsecondary education and training. By 2007, that percentage had ballooned to 59 percent. In the aftermath of the most recent recession, that number will grow higher. We project that, by 2018, 63 percent of all jobs in the United States will demand workers with at least some college education.

Career mobility and advancement opportunity, too, have become increasingly tied to education. College used to be the preferred route to economic success. Today, it has increasingly become the only route. In 1973, almost three-quarters of workers in the American middle class had a high school education or less. By 2007, that percentage had dwindled to just 39 percent.

The traditional explanation for the disappearance of well-paying high school jobs—that we have moved from a manufacturing to a services economy—only partially explains why employers today favor workers with postsecondary education and training. In fact, even in the manufacturing sector, education and training requirements for employees have toughened. High school alone doesn’t suffice anymore. The root cause of this transformation is a process that economists call skill-biased technology change. In this case, the responsible technology is the computer, which automates repetitive tasks and makes them extremely inexpensive to perform. In doing so, the computer allows employers to cut costs by eliminating positions that emphasize such repetitive work—a process accelerated by economic turmoil like the recent recession. Tasks that cannot be automated are, by definition, non-repetitive and more sophisticated, requiring skilled workers to perform successfully. Occupations with high levels of such tasks—professional and managerial jobs, for example—require more advanced skills conferred by postsecondary education and training.

We have been slow to react to this trend, though. In fact, according to our recent supply-and-demand analysis of wages, we have been under-producing college graduates for 30 years. Now, with low-skill jobs disappearing at an increasing rate as a result of the recession, that gap threatens to widen even further. Jobs that...
are projected to grow the most are in industries—such as information services, healthcare professionals and technicians, and business and professional services—that require postsecondary training most intensely. Of course, even industries that are not growing fast will still need workers. Although its share of employment is declining, between now and 2018, nearly 2 million jobs will open in the Manufacturing industry due to worker attrition from retirement and death. But even here, education requirements will be greater than in past years, with more jobs requiring at least some postsecondary education or training of their applicants.

There is no question, then, that education is a critical gatekeeper to middle class jobs and earnings. But it is not the sole determinant—particularly when it comes to questions of earning power. Education and occupation interact in complex ways, and it is not unusual to find circumstances where workers with less education out-earn those with more. To understand the nuances of this phenomenon, we have developed five rules:

• Degree level matters. In general, people with more education earn more than those with less education. For example, over a lifetime, Bachelor’s degree holders make 84 percent more than high school graduates. That’s about a million dollars over a lifetime.

  But

• Majors matter. Within degree levels, people have vastly different earnings, depending on their majors. For example, the highest-earning Bachelor’s degree major, Petroleum Engineering, makes $120,000 a year at the median, compared with $29,000 a year for counseling psychology majors.

  But

• People with less education can earn more money than better-educated colleagues due to occupational choice. For example, engineering technicians with an Associate’s degree can make more than guidance counselors with a Master’s degree.

  But

• Within occupations, degree level still matters most in determining earnings. For example, an Associate’s degree holder in Engineering still makes less than a Bachelor’s degree holder in Engineering, who in turn makes less than a graduate degree-holder in Engineering.

  But

• Race/ethnicity and gender are wild cards that can trump all else in determining earnings. For example, women have to earn a PhD to make as much as men with a Bachelor’s degree.

The importance of education is clear. While race, gender and other factors can affect earnings and advancement in a career, education is the primary key for entrance to middle class opportunity. Without postsecondary credentials, workers find themselves in an ever-shrinking pool where jobs are usurped by information technology and possibilities dwindle with each passing day.

Many people are upset about the increasingly tight ties that bind work and education. While training foot soldiers for capitalism is not the sole mission of our education system, the inescapable reality is that ours is a society based on work. Those who are not equipped with the knowledge and skills necessary to get—and keep—good jobs are denied full social inclusion and tend to drop out of the mainstream culture, polity, and economy. In the worst cases, they can be drawn into alternative cultures, political movements, and economic activities that are a threat to mainstream American life. Hence, if secondary and postsecondary educators cannot fulfill their economic mission to help students become successful workers, they also will fail in their cultural and political missions to create good neighbors and good citizens.

So, in a world where postsecondary education is more important than ever, how can
leaders effectively craft policy to maintain our economic competitiveness and ensure decent lives for all Americans? The U.S. higher education system is a kaleidoscope of institutions and interests, loosely bound and largely autonomous from federal policymaking. Most higher education policy originates in the states, and that is likely to remain true into the future.

The federal government is not powerless, though. It has leverage via its subsidization of student loans and grants under Title IV of the Higher Education Act. To date, however, the federal government has not taken the fullest advantage of this leverage to enact systematic reform. One way to use this leverage is to link postsecondary education data to employment outcomes, and the Department of Education is taking a step in this direction with its new gainful employment rule. This rule aims to tie program performance, as measured by employability, to Title IV student loan eligibility.

We believe this is a healthy development and indicative of the movement—although painfully slow—of the nation’s higher education system towards greater accountability. The question is not one of federal control or takeovers of independent institutions, but providing needed incentive to better align postsecondary education programs with employment opportunities in the workforce.

Critical to this effort are information systems that can help students understand what kinds of education and training the economy demands, help educators shape their programs to better serve their students, and help employers find the skilled workers they need to fill their increasingly complex occupational needs.

Information systems that encourage such alignment reflect a preference for disclosure and preserving healthy market competition. They also, we believe, will help minimize the future need for aggressive federal oversight or expensive, additional state-level regulation.

The federal government is already providing money to the states to improve educational data systems, and 26 states now have the capacity to connect wage record data with postsecondary transcripts. That is a start, but more can be done. The federal government can work to speed such systems along by, for example, attaching Pell grants to outcome measures.

Such steps are critical if we are to meet the challenges posed by our changing economy. In a nation transformed by recession, technology and inexorable economic forces, we must do everything we can to help Americans prepare for the future and seize opportunities as they present themselves.

If we dwell on the economic wreckage in our rearview mirror, lamenting low-skill manufacturing jobs that are unlikely to return, we run the risk of colliding head-on into our economic future. The casualties of such a collision would be nothing short of catastrophic: a generation of workers denied their opportunity to strive for the good life and to achieve the American dream.
There is no doubt in my mind that an Ontario 18 year old young adult who finished high school this year is much better prepared to gain success in the global arena, due to reforms we began eight years ago. Her chance of going to university this fall is up dramatically, as is her likelihood of having a diploma at all (40% and 20% better respectively). Her relative improvement in prospects is higher still if she happens to come from a recently immigrated or a low income family, lives in a rural area, is a francophone or has been identified with special education needs. The diploma itself has more meaning as her foundational skills in reading, writing and math are better, though perhaps not as strong as those graduating a few years behind her. Exposure to citizenship or character education means she already feels more connected to her community. There is a good but not yet great likelihood that she will be more physically fit and have healthier eating habits and she is guaranteed to have enjoyed more extracurricular activities through school. Her exposure to the arts and music is stronger. Chances are high that her feelings toward education are more positive owing to better motivated teachers, upgraded buildings and equipment and the virtual absence of labour strife.

As Minister of Education in Ontario starting in 2003 it was my privilege to oversee an ambitious education reform agenda for just over 2 million school children and youth, 40% of Canada’s total. Within three years, we were able to turn around a K-12 system widely perceived to have been in crisis. Student achievement, graduation rates, public and parent confidence, as well as teacher and other education staff morale were at all-time lows or stagnant and we were able to obtain unprecedented improvements in each. (Please see table 1). The objective success of the Ontario “Excellence for All” program has since been confirmed by external evaluations and by results in international testing. Progress for Ontario students has been sustainable and continues to grow into the present.

The fulfillment of these outcomes was due to a large number of people, and that wide ownership is ultimately the key to the story of Ontario education reform. It is also important to relate, however, that while the credit should be appropriately diffuse, the results do also line up closely with the specific targets we set out beforehand and promised to the public as part of the 2003 election campaign. It is possible for political actors to steer large scale education reform.2

Another key feature of the Ontario education advantage is that it was a “counter-reform” shaped in part by the experience of eight years of major, but ultimately failed, education reform efforts by the previous government.
The main difference between the back to back reform programs was not in content per se but in the type of approaches followed. The former put exclusive emphasis on heavily prescriptive and centralizing changes to institutions, powers and policies as ends in themselves. Many of the measures were conflict driven and detracted resources and focus away from student needs. By contrast, and partly in reaction, we concentrated ourselves with understanding and influencing the dynamics of the education system; how the various components (and the people within them) worked and could be made to work better together to generate the best outcomes in the classroom for students.

Our overarching goal for our Ontario education reform was to regain public confidence. We were galvanized by an alarming, accelerating flight of parents with means taking their children out of the public system to private schools, which saw a 44% enrolment increase in eight years. We were convinced the very future of a social consensus over high quality public education in our province was at stake unless we could deliver conspicuous results within a relatively short period of time.

There seemed to be a destructive cycle underway in Ontario education by 2003, where bad outcomes were leading to lowered public support and unwillingness to invest. We believed we could institute a virtuous circle wherein gains would lead to public support which would then permit us to act again for further gains. We recognized a significant opportunity for what some call “transformational leadership” to education by our party and government—where our actions could bring about increased motivation, morale, performance and ultimately, leadership taking, on the part of those in the system themselves. This was consistent with our perspective of Ontario education as a service oriented, heavily altruistic endeavour where dedicated people and institutions had become demoralized, unfocused and were underperforming. It was also founded on the inescapable reality that all senior government officials have to accept with some humility; all our grand ambitions hinge on the fact that when the classroom door is closed, it is the teacher who will teach. If we were going to make progress then teachers, principals, education support workers, as well as parents and students, would have to be fully engaged.

We developed our insights in the course of three years of intensive interaction with the system while in opposition in the form of meetings, town halls and events by our Leader, now Premier, Dalton McGuinty, I as our Education Critic (or “shadow Minister”) and other members of our caucus. At almost every school we visited we found people with a clear view of how to address the challenges facing that school’s students, but either they lacked the permissions, the flexibility, or the resources. We also sought firsthand advice from experts in successful education reform.

There were five interrelated components to our ‘education reform through active leadership’ strategy. They were sequential in terms of introduction and emphasis but eventually all ran concurrently. First we set out and continuously reinforced a vision for reform. Secondly we took calculated risks to earn credibility with the public and within the sector. Third, we gave ourselves the capacity to ensure implementation of our outcomes. Fourth we worked to establish a partnership based on respect. Fifth, we attempted to shift the culture to one of results and enterprising.

Establish a Strong Sense of Vision

Education reform needs a vision that engenders wide agreement and participation in its moral purpose. In Ontario we expressed it as the commitment for public education to deliver “excellence for all,” where every child would have the opportunity to do fully as well as their abilities and willingness to work could take them. This meant both higher achievement or ‘raising the bar,’ and ‘closing of the gap’ between higher and lower performing students. We struck a tone of urgency emphasizing the earlier each child’s individual needs were known, the better and potentially less expensive
their progress would be to foster. We articulated a ten point student centred vision for reform that both elementary and secondary levels could relate to (please see appendix) together with measurable interim targets. While the statement reflected the overall ambition of the government for student achievement, the initial priority was literacy and numeracy:

- Every student in the province should be able to read, write, do math and comprehend at a high level by the age of 12 as the necessary foundation for later educational and social choices.

Everything we did in elementary education was related through this mission. For example, we positioned standardized testing as the means for the system to take into account the relative challenges and opportunities for each child by grade 3, by flowing resources and focus where they were needed the most, so that it would be acted upon by the time the child had completed grade 6. We added a secondary level goal as our next emphasis:

- Every student should receive a good outcome from publicly funded education, whether it is an apprenticeship, job placement, or admission to college or university.4

Together with our key officials I spent a full year outlining the reform mission directly to the parents, teachers, education support workers, principals, supervisory officers and others all over the province, always in interactive forums to try and gain commitment.5 In doing so we established a beneficial frame for communication about education within the sector, with the public and the media.

Take Calculated Risks

Ontario in the late 1990s and early 2000s had become an education battleground, marked by lockouts and strikes that cost 27 million learning days, and included the complete loss of high school extracurricular activities for nearly two years. The system had already undergone eight years of experimentation, budget cutbacks and unhelpful scapegoating. The tone of education had to be changed quickly and dramatically.

The only sure way we could achieve that was through our actions. We not only set aggressive targets for student results with specific timetables but we put ourselves as the central government on the hook for their attainment. When asked what would happen if we didn’t reach our objectives, we were clear: there would be a new Minister of Education and the Premier expected to pay a price at the polls.

In our first ‘throne speech’ (equivalent to a state of the union address), we positioned Mr. McGuinty’s ambition to be the “Education Premier” and indicated education was our number one priority. When faced with a stark choice at the beginning of our mandate of backing away from either our education commitments or our pledge not to raise taxes due to an unexpected $5.6 billion deficit, (after six months of searching for alternatives) we chose to raise taxes. In other words we acted preemptively by investing our political and funding capital at the front end so we could begin to earn the necessary trust and respect of the sector, and the interest and support of a cynical public. The almost immediate result was a significant “goodwill dividend,” indicative in the early improvement to test scores even before many of our reform program elements were fully in place and by the thousands of teachers who took the voluntary upgrading we offered during the summer.

Embed Capacity for Implementation

We knew from our examination of other education reform projects that we could not assume the system as configured would be able to implement the improvements we sought to make. Despite, or perhaps more accurately, because of, continual waves of previous reform the system was geared defensively, to go along with or even simply survive the latest measures. We had to take full responsibility for both the impact of the reform effort on the sector, and for build-
ing the capacity of the system to deliver. This required several key changes in the system from top to bottom and most specifically in schools.

To ensure a streamlined decision making capacity at the top of government we set up regular meetings of an unusual standing group of five to a maximum of ten people we termed the “guiding coalition”: the Premier, myself, our Special Advisor on Education, Michael Fullan, and our top bureaucrats and political staff. I likened this then to hot-wiring the system. It permitted a closely shared strategy and sent clear signals to the labyrinth of approval processes, keeping us relatively nimble for both initiatives and reactions.

Achieving coherency throughout the system in terms of roles and accountability is an act of reform in itself, by eliminating the “plausible deniability” that lives amid blurred responsibilities. To obtain coordination capacity at an education ministry (department) used to enforcing standards and rules we brought in some of the most accomplished practitioners from the field. For elementary we set them up in an action group called the Literacy and Numeracy Secretariat to work with school boards and schools, train teachers and analyse progress. We developed a Student Success group and network for secondary. We funded the corresponding senior coordinators for both at the school board level.

The real heart of our education reform was building capacity in the schools. Additional teachers and supplementary training for existing teachers were the most prominent elements of this new capacity. We added 1,100 primary teachers to lower class size alone. We trained and funded time for 16,000 Lead Teachers for literacy and numeracy—four for each elementary school in the province. We provided training upgrades to every elementary teacher. In secondary, we funded a new Student Success teacher in every one of the 835 high schools with a mandate to intercept struggling students from elementary schools and customize their supports. We also worked to free up the principal from administrative duties to gain more time as instructional leader.

Reform measures cannot be undertaken in isolation from each other or from ongoing developments. A key part of managing for results was our capacity to proactively anticipate those other issues which, while not central to priority reform outcomes, had the potential to significantly distract. We considered ourselves fortunate for the periods when we could realize our goal, which was to spend half of our time on reform issues and the half on “all the rest.” A key tactic was to convert as much of the response to other issues to the benefit of reform priorities.

For example, the most significant ‘distractor’ issue in Ontario was the first ever expiration of all 122 teacher contracts across the province at the same time, a year into our mandate (a gift from our predecessors). By law we had no direct involvement in collective bargaining. Yet with one stroke our ability to afford the initiatives that were needed could be jeopardized. Just as importantly, without peace and stability we would not have a performance platform to deliver the results we had promised. Our solution was to create a first time “provincial dialogue” between ourselves with the teacher unions and school boards. We were able to intertwine elements of our reform agenda for student success and arrive at agreement templates that were implemented across the province, at a cost lower than the average for industrial settlements at the time.

Adequate funding is an essential part of the effectiveness of education reform. We increased our spending by about 8% per student per year after inflation in the course of the first four year period. Of this, about two-thirds or just under $1 billion annually was devoted to increased student achievement and one-third to other needed improvements. Our overall spending was up by $2.9 billion on education per year, while we also found about $600 million in annual savings to put into priority areas.

The last part of our new capacity to be developed were the legal powers to intervene to protect student progress, which we declared a provincial interest along with financial matters
and student safety. Once we had established our bona fides to the sector and the public we passed legislation giving ourselves the ability to take over underperforming boards. We also used existing powers to protect funds, to suspend benefits and otherwise discipline outriders, but only as a last resort. Overall, we adopted an approach of “constructive accountability” that allowed us to use the right mix of incentives, transparency and finally pressure to obtain results. By not pre-judging the responsibility for problems we opened the door to more effective ways of solving them, and by emphasizing transparency for everyone we had a more powerful tool than simple punitive measures could provide.

**Partnership based on respect**

The word partnership is frequently overused to the point of losing meaning. We determined that rescuing the concept and putting it in a sturdy framework within education was the key structural way to consolidate the longer term changes we were hoping to effect in the sector. We established a number of vehicles for input, shared problem solving and decision making. The centrepiece was an Education Partnership Table chaired by the Minister that meets quarterly, onto which we offered seats to the teachers, principals, education workers, school trustees, directors, students and parents as well as education non-profits and private sector education vendors. We required the groups to agree to mandate their representative to contribute perspective about the broad public interest in education, and not just the interests of their respective memberships. In return, we brought all new initiatives in education to the Partnership Table before they went to the Cabinet or the Legislature. We drafted policy papers and modified them based on the input received, often circulating them to the sector as a whole and sometimes setting up sub-groups or Working Tables. Every issue was then put into action in a timely manner. We also established other collaborative, power sharing mechanisms. One example was called the Provincial Stability Commission where teachers and boards met to reduce reliance on formal, legal grievances and it brought the number of outstanding grievances down from over 800 to 40 within four months.

In Ontario partnership vehicles have been a way to keep the focus on student needs. They also have served to bring out sector professionalism, maximize benefit from sector expertise, and to save money, as well as to gain buy-in to initiatives and safely air out contentious issues.

**Culture shift to one that values results and enterprising**

According to Maslow, creativity, innovation and problem solving happen once an individual experiences security, confidence and self-esteem. Education systems prosper under similar conditions. In our campaign for education reform we had a simple mantra: “the new 3Rs of Ontario public education are Respect, Responsibility and Results.” Respect meant healthy attitudes between all groups in the sector including government, anchored by mutual regard for our mission on behalf of students, and by the public toward the sector. Responsibility was accountability for our individual roles and contributions as well as for the healthy well-being of the system as a whole. Results meant delivering conspicuous outcomes for students first of all, but also to demonstrate value to the taxpaying public at large, at a time when just one of four adults have a child in the public education system.

The purpose of our campaign was to cultivate a shared attitude open to new possibilities and to the enterprising we needed to take root at the school and board levels. By enterprising I mean the matching of great ideas with great implementation to realize improved outcomes. We devoted significant dollars to competitive funds for projects that would match the particular needs of schools and/or groups of students. We also funded the rapid transfer of proven ideas through lighthouse programs. When we identified underperforming schools, our first initiative was to offer the existing school team
the chance to fashion an improvement plan and access transitional resources. Only if they were unsuccessful did we then send in a turnaround team of experts, followed by personnel changes if improvement remained elusive.

For example, we used a device called ‘statistical neighbours’ to enable school teams to proactively compare themselves with other schools across the province who were serving similar student demographics, and provided resources for these schools to interact. We were aided in our quest for an enterprising culture by the unique makeup of the Ontario system as many parents effectively have choices of different school systems within public education that have to be paid attention to, particularly in a time of declining enrolment.

Conclusion

The Ontario education reform experience offers a superior model for legislators and governments to consider in creating an international education advantage for their youth. It demonstrates that reform can be accomplished relatively rapidly and sustainably across a large system. Compared to high pressure/individual reward models, transformational leadership may seem more difficult to achieve and more risky for political and education leaders but the rewards for students are markedly higher. It is more suited to public education endeavour and has a relatively modest cost. The virtuous circle that can be achieved has not only educational benefits but political rewards that include but also transcend short term electoral credit.

People have enough anxiety about their own economic security than to have to worry about their youth being in the slow lane outpaced by those in other countries while their own education system is in conflict. If we can realize the needed improvements without crises, our energies are better spent fighting ignorance, and fighting for every child to be able to participate in and contribute to society as fully as possible as an adult.

There are many unknowns to each country’s global challenge, and this includes the exact contribution that public education can make in meeting the challenge. What is certain is that improved public education has an important role to play and all political leaders will be held to account for making good choices in that regard.

1 As Avis Glaze ably relates in the detailed overview included in her paper for this conference, Ontario actually has four publicly funded education systems—a distinct public one and Catholic one for each of the majority English speaking and the minority francophone populations.

2 It may be worth noting that in the Canadian political context the Minister, equivalent to a Secretary of Education, must be an elected representative and member of a Cabinet of Ministers with other portfolios reporting to the Premier who together exercise the executive power.

3 All three of the different parties (New Democratic, Conservative and Liberal) successively in power in Ontario had unanimously agreed with the main findings of a major “Royal Commission on Learning” in 1995, including elements such as standardized testing and report cards, a professional body for teachers and a centralized formula for education funding.

4 As in the US, but distinct from much of Europe, an unrealistically high number of Canadian parents (71%) want their children to go to university. While we raised enrolment to 40% from 28% of high school graduates, we also worked hard to re-orient expectations of both the system and parents to take the remaining 60% of students fully and fairly into account.

5 We initiated an interactive email based group, OPEN or Ontario Public Education Network of people I signed up in person at engagements. It grew from about 6,000 people in opposition to 17,000 in government.

6 Iconic American psychology professor Abraham Maslow focused on the positive attributes exhibited by higher performing individuals to support his propositions for a “hierarchy of needs” with respect to human potential and mental health and its application in management.
Appendix

(Excerpt from)

Building the Ontario Education Advantage: Student Achievement

April 29, 2004 (v.3)

A VISION FOR SUCCESSFUL STUDENTS

Our goal is to help develop the intellectual, emotional and physical potential of our children and young adults so they become the best contributing citizens they can be. We believe:

• Every student can learn;
• Every student can and should come to school ready to learn;
• Every student should learn in a school that is properly funded and in good repair;
• Every student in the province should be able to read, write, do math and comprehend at a high level by the age of 12 as the necessary foundation for later educational and social choices;
• Every student should have significant exposure to music and the arts;
• Every student should enjoy regular physical activity, appreciate a healthy lifestyle and have access to a full range of extracurricular activities;
• Every student should be safe and feel safe at school and in the schoolyard;
• Every student should reach the highest level of achievement that his or her ability and willingness to work hard will permit;
• Every student should receive a good outcome from publicly funded education, whether it is an apprenticeship, job placement, or admission to college or university; and
• Every student should know how to think for him or herself, appreciate the rights and obligations of good citizenship and learn about character values.

Each of these outcomes will be tied to specific, measurable results that the government is prepared to take responsibility for achieving.
<table>
<thead>
<tr>
<th>Measure</th>
<th>Status 2003</th>
<th>Results to date</th>
<th>Pledge Made</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student achievement on standardized tests.</td>
<td>57%</td>
<td>70% (2010)</td>
<td>75% (2009)</td>
</tr>
<tr>
<td>(Avg of students at provincial standard of</td>
<td>Fat for four previous years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4th grade for Reading and writing, Gr.3, &amp; 6, Math for Gr. 3, &amp; 5 (Acad) &amp; 11th grade for Gr. 10 (literacy) (pass)</td>
<td>Improved 15% by 2006 and 24% by 2010</td>
<td></td>
<td></td>
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<tr>
<td>Drop-out rates</td>
<td>32%</td>
<td>19% (2010)</td>
<td>15% (2012)</td>
</tr>
<tr>
<td>Students leaving high school without diploma</td>
<td>No change for 25 years then increased (up to 6 points) due to curriculum change in 2000.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public confidence</td>
<td>25%</td>
<td>65% (2006)</td>
<td>NA</td>
</tr>
<tr>
<td>Disruptions (learning days lost to strikes and lockouts)</td>
<td>27 million in preceding 3 yrs</td>
<td>&lt;27,000</td>
<td>Peace and stability</td>
</tr>
<tr>
<td>Private school enrolment</td>
<td>Up by 44%</td>
<td>Down by 12%</td>
<td>Reduce</td>
</tr>
<tr>
<td>Class sizes – primary</td>
<td>2 out of every 10</td>
<td>9 out of every 10</td>
<td>Real cap of 20</td>
</tr>
<tr>
<td>Ratio of children in classes of 30 or less</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University Enrolment</td>
<td>28%</td>
<td>40% (up by 4%)</td>
<td>NA</td>
</tr>
<tr>
<td>Percent of previous year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>high school graduates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher quality</td>
<td>Mandatory written test for new teachers. Recertification for all teachers every 5 years, with refresher courses in practice only applied to 1 in 6 teachers.</td>
<td>1 year new teacher probation induction, school mentorship and 2 full in class evaluations before recertification.</td>
<td>Treat teachers with professional respect</td>
</tr>
<tr>
<td>Teacher attrition</td>
<td>1 in 3 (2001)</td>
<td>&lt;1 in 10 (2006)</td>
<td>NA</td>
</tr>
<tr>
<td>Low School performance</td>
<td>75% (of 4,020)</td>
<td>201 (2006)</td>
<td>Reduced by 74%</td>
</tr>
<tr>
<td># 'low performing' schools (50% of students not meeting provincial standards)</td>
<td>Will not allow any school to fail our kids and tear turnaround teams for any school not measuring up</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Observations

Community Colleges are Key to Social Mobility in America

A diverse group of students walks through the doors of our community colleges everyday. They vary in terms of age and life experiences, and backgrounds in language, literacy and mathematics. We are now asking our community colleges to engage much larger numbers of students, to achieve much higher levels of effectiveness in educating them, and to operate with greater efficiency in the use of their resources. Advancing any one of the Triple Aims of Educational Reform—engagement, effectiveness and efficiency—would be ambitious. To move on all three simultaneously is extraordinary. Without a concentrated and coordinated Research & Development effort, it is hard to envision how this could be accomplished.

A Major Problem: Developmental Mathematics as Gatekeeper Opportunity

To earn a degree, certificate or license in most community colleges, students must complete a college-level math course. Even though most applicants have graduated from high schools and passed basic competency tests for graduation, many are still required, based on a placement test, to enroll in a sequence of remedial math classes, collectively known as developmental mathematics. Some students are required to take as many as four such courses before they are considered “college ready.”

For many students, developmental math is the place where aspirations go to die. Recent studies report that the vast majority of students placed into developmental mathematics fail, and they fail in a variety of ways. It is estimated that up to seventy percent do not complete the developmental courses and so never take a math class that would count toward a degree, certificate or transfer. Some never register for these courses even after several years of enrollment. Some fail and then repeat courses over and over, and others just drop out altogether. These failures have dire consequences for individual students and for society. Data recently collected by the Carnegie Foundation for the Advancement of Teaching from 17 colleges document that fewer than 15 percent of students, initially targeted for developmental math education, actually acquire college credit in mathematics within two years of enrollment.

A Need for a New Direction

Increasingly, students are asking, “Why do I need to sit through the same courses again (and typically taught in the same way)?” Largely driven by tradition, developmental mathematics is organized as a sequence of four courses on a curricular pathway aiming toward calculus. This sequence usually begins with remedial
arithmetic, and then moves to pre-algebra (covering middle school math), elementary algebra (Algebra I) and intermediate algebra (Algebra II). Both this content and course structure result in serious impediments to students, in part because there are so many “opportunities” to fail.

Ironically, the assumed goal of a pathway toward calculus has little relevance to many students’ career aspirations. It is not an appropriate target, for example, for students who enroll in a community college as a route to occupational certification (e.g., licensed practical nurses, employment in public safety). Nor is it a prerequisite for a range of college majors where statistics is the requirement.

Although we are now pressing more students to take more mathematics along this traditional pathway, few jobs actually require this subject matter knowledge. Why then must every developmental mathematics student learn to solve simultaneous quadratic equations or factor trinomials? To be sure, such knowledge is appropriate for students seeking a college major in a STEM (science, technology, engineering, mathematics) field, and expanding the pipeline toward STEM is in our national interest. But even if we were successful at achieving an ambitious goal—launching a quarter or even more of our students on such a pathway—what then do we do for the vast majority remaining?

A growing number of mathematicians and statisticians agree that a pathway aimed primarily at calculus is not essential for all students. Rather, we should refocus on Quantitative Literacy for all. The goal is for students to use and apply well basic arithmetic, statistics, practical analysis of data, and quantitative reasoning to the broad array of problems they are likely to encounter in work, in personal life and as educated citizens in an increasingly complex democratic polity. It is not more complex content that most students need to master, but rather increasing their capacity to engage complex applications of basic mathematics.

**Problem Centered R&D**

Whenever an educational problem comes into focus, as is the case today with the high failure rates in developmental mathematics in community colleges, an extraordinary array of new initiatives bursts forth. Typically these initiatives reflect different understandings of the problem and scout different solution paths. This competitive parallel innovation space can be extremely productive in generating new projects and advancing effective local action in some places. However, it does not “add up” generally to solving problems at scale.

The conclusion seems clear. Discrete, isolated projects must give way to longer-term, cooperative initiatives that move through repeated cycles of problem diagnosis, design, assessment, redesign and retry. We need explicit attention to the variations among sites and circumstances where improvement must take root. It is not sufficient to know that a program or innovation can work. We need to know how to make it work reliably for a diverse array of students and across the diverse contexts and situations where they are educated.

**An Inadequate Infrastructure for Informing Improvement**

We are stuck today as a field between two polar views. A robust infrastructure has emerged for examining narrow, focused propositions through randomized field trials. These studies aim to estimate precisely the average effect of some intervention over some non-randomly selected set of sites, but provide little or no evidence as to how and why the intervention may work some places and not others. (Average effect sizes are typically small.) An alternative mode of inquiry, action research, places local concerns at the center. The strength of such inquiry is the salience of its results to those directly engaged. How others might learn from this and use it, however, remains largely unaddressed.

A *science of improvement* offers a productive synthesis. It melds the conceptual and methodological strength associated with scientific study to the contextual specificity, deep clinical
insight and practical orientation characteristic of action research. It emphasizes multiple, small rapid tests of change by varied individuals working under different conditions. When carried out through problem-centered networked communities, each test provides a bit of evidence, a bit of local learning. When this collective activity hypothesizes solutions through rigorous problem analysis and uses common data to assess efficacy, a foundation for accelerating learning for improvement at scale is set in place.

**Improvement Research.** Each network seeks to design and test effective interventions while generating learning about how these work, for whom, and under what organizational conditions. A coherent and explicit chain of reasoning guides intervention design. Specific, measurable outcomes create shared targets for the community. Problem solving occurs simultaneously in a diverse network of sites with practical inquiry occurring in each locale as to whether the changes introduced are actually an improvement.

Operating under these conditions, it is now possible to accumulate evidence network-wide. The use of common frameworks for defining problems and hypothesizing solutions coupled with common measures for examining processes and outcomes now makes this possible. The breadth of information generated across contexts and participants enhances possibilities for innovation and expands insights beyond those arising in any one place. Thus, improvement research structures systematic inter-organizational learning. Such learning is largely missing in education today where all innovation seemingly “must be invented here.”

**Problem-Focused Networked Communities.** Enhancing the efficacy of our educational institutions at scale is a social learning problem. Networks, focused on improvement, encourage people with different perspectives to work together. A network model acknowledges that constructive change can come from many different sources and that improvement at scale will entail coordinated efforts across those sources. Simultaneously, it redresses the “silos of improvement” that characterize current efforts. There is extraordinary dynamism in the field today with different individuals and organizations seeking to advance improvement at almost every turn. Yet absent institutional structures to cumulate this learning, the overall enterprise resembles the Tower of Babel—many talented and committed people working very hard, but unable to advance on a complex goal together.

How might networks engaging diverse expertise—practitioners, designers, researchers, technologists and others—work to spur improvement? Organizing these efforts are four core concerns at the heart of designing, developing and improving complex systems:

1. How do we understand the problem(s) we seek to solve and extant system(s) in which they are embedded? Productive solutions entail consideration of how any proposed intervention integrates adaptively into current contexts.
2. Be very clear about what specifically we are trying to accomplish. This involves identifying specific measureable targets that will unite efforts of diverse participants in the R&D community.
3. Carefully articulate the changes that might be introduced and the rationale for each. Like scientific communities, generally participants theorize together about the logic of proposed solutions.
4. Constantly ask: How will we know if the changes we introduce are actually an improvement? And, what else might also be happening that we did not intend?

Standing behind this is a quality improvement stance that has developed over the past half century and now operates routinely in many non-profit and for-profit sectors. Variability in performance is the problem that needs to be solved if we are to achieve more efficacious educational systems with reliability at scale.

Engaging in such work will entail challenges to prevailing norms about prized work in the academy, to views about faculty autonomy...
around teaching, and to widespread beliefs that every solution must be “invented here” with every local site accomplishing this on its own.

**An Example: The Statway™/Quantway™ Improvement Networks.** The Carnegie Foundation for the Advancement of Teaching has catalyzed the formation of two networked improvement communities involving 27 community colleges across eight states. These national networks engage a diverse group of academic scholars and commercial partners together with community college faculty, institutional researchers and community college leaders. Their joint efforts focus on one critical problem—the high failure rates of students who enroll in developmental mathematics courses.

The networks’ aims are to double the number of students who earn college credit in math within one year of continuous enrollment. Network members are working together to build, field test, and refine a year-long integrative pathway that includes: instructional materials, social-emotional supports for students, online out-of-class supplemental academic resources and data systems, targeted professional education for faculty, and explicit attention to the special issues posed for students whose primary language is not English.

Three aspects of the networks’ work deserve mention. First, faculty teams both within and across colleges have joined together with designers and researchers focused on common measureable improvement targets. Their work is organized around a shared practical understanding of this problem, a common standard for detailing change, common protocols of inquiry and common measures for key processes and student outcomes. Second, it is expected that each college will do its work in somewhat different ways as each seeks to integrate change into their local context. They join together in-network to document these local adaptations as part of a larger natural experiment in learning from practice to improve it. The network focuses on both intra- and inter-organizational learning, seeing the latter as key to accelerating progress across the whole field of action.

Third, new organizational and institutional arrangements are being established for this social learning to unfold. A problem-centered hub at Carnegie holds responsibility for detailing the initial problem specification, recruiting a cadre of leaders and champions into the work, establishing rules, roles and responsibilities for participation, and creating the base analytic and technical infrastructure for the work of the community. In these ways, the hub is establishing the initiating conditions for the subsequent growth of a self-generating learning community.

This is challenging work and the field transformation being sought will not come easily. States and districts must move away from their focus on compliance (and legislating micro-change) towards building infrastructure that supports learning within and across institutions. We should encourage faculty unions to take on leadership roles as active agents of systematic learning from practice to improve it. University researchers, businesses, and faculty will need to work outside of their traditional roles to collaborate as collective problem-solvers. In all these regards, it is deeply ironic how contemporary education is so ill equipped to learn, develop, and improve. Advancing the changes discussed here would make the educational field worthy of its name.

**An Integrative Force for Problem Solving.** As the initiating hub for this activity, Carnegie advocates for a continuous performance improvement agenda where participants commit to common standards of evidence to advance their own work and create a space to learn from evidence emerging from each other’s work. The design and development of the network, both within individual institutions and across the community, will scrutinize what is and is not working for which students and in what contexts. (The hub function in this regard acts as the internal voice of accountability.) As we find evidence of “what works for whom and where,” Carnegie will promote these ideas, engaging more practitioners in the uptake of stronger practices. We will exploit the power of open educational resources to rapidly share...
what is being learned, to encourage others to innovate, and to disseminate knowledge from these expanding efforts. In short, we aim for a high-performing, social network engaged in continuous systematic learning from practice for its improvement.

How Can the Federal Government Help?

A paucity of federal support exists for educational R&D focused on improving teaching and learning in community colleges. Substantial federal funds are directed at financial aid for students, but little attention focuses on advancing the triple aims of education improvement in the institutions they attend. Of the eighteen R&D centers funded by the Institute of Education Sciences, only one focuses on higher education. Moreover, only a modest subset of its work considers community colleges, and none focuses directly on instructional improvement. Community colleges were excluded from consideration in the federal I3 (Investing in Innovation Fund) and they are not part of Race to the Top.

The Fund for the Improvement of Post-Secondary Education (FIPSE) does provide support for innovation in higher education, but networks such as described in Gail Mellow’s paper are the rare exception. Most grants are awarded to individual institutions for local projects. While nominally these grants are intended to develop “model programs”, few achieve widespread implementation. Moreover, when other institutions do consider these projects, their derivative (or independent parallel) efforts may share a name in common but little else. In short, “model projects” do not move easily into other hands nor adapt readily to different organizational constraints. Such problems are legendary writ large in education; yet concerns about how we might better achieve efficacy with reliability at scale remain off the design table. Policy continues to view these as local failures to implement, rather than core R&D issues for improvement.

Make R&D for Improvement a Core Federal Objective

In closing, let me (as a non-policy person) offer a few policy ideas for consideration. The first three suggestions offered below focus on creating the resource and support base for networked communities engaged in improvement research; the fourth recommendation aims at institutional incentives (and ultimately questions of institutional identity) to move in this direction.

- Directly support hubs to develop problem-centered networks that initiate and sustain the social, technical and analytic infrastructure necessary for improvement networks to form and function.
- Encourage the formation of public-private partnership in this domain. The idea of networked improvement communities in education is innovative. How best to execute on this poses its own set of design-development challenges. We would be wise to exploit the wisdom of crowds. There is much to be learned (and quickly) through multiple entities seeking to form, support, develop and govern improvement networks. Such a “network of networks” could well accelerate our national capacity as to learn how to improve.
- Include faculty participation in improvement networks as a targeted priority for discretionary federal support. Incent colleges to transform pay and promotion scales to reward to such faculty engagement.
- Consider linking institutional eligibility for federal support to explicit accountability for student success, rather than just accountability for access and enrollment. Framed properly, this would create institutional incentives to integrate research on instructional improvement into the everyday fabric of community college life.
Taken together, these policies would constitute a post-secondary environment much conducive to accelerating our learning from practice to improve.

**Endnotes**

1. Students with language and literacy limitations may also need to complete other remedial courses before they are eligible to take a college level mathematics course.


Higher Education for the 21st Century: Transitioning Colleges to Better Serve the Needs of Today’s Students

Dr. Gail O. Mellow
President, LaGuardia Community College

If I ask you to close your eyes and imagine a college student, who do you see? Most imagine an eighteen year old, living in a college dorm, learning how to negotiate adulthood, studying hard and, for some, partying harder. Your image would not be incorrect, but it only describes a minority, in fact a shrinking portion, of American college students today.

America’s typical undergraduate looks much more like I did when I went to college, with a 2 year old daughter, working full time, and attending Jamestown Community College in rural New York State nights and weekends. Today, most students balance work, family and school. In 2011, the majority of students do not live on campus and work at least 10 hours a week. As importantly, over 50% of all undergraduates in America attend a community college. College is no longer a time away from the real world, a transition to adult life nor the proverbial ivory tower—rather it is one piece in the complicated puzzle of students’ lives and an integral part of our world.

College is a profoundly different place now than it was when America established the policies and business models that frame higher education. Higher education, and the rules that drive the financing and organization of colleges, must change—a difficult prospect for institutions that still dress in 13th century scholar gowns for graduation! But if colleges respond to an evolving world, they will cede the future to others.

Who Enrolls in American Colleges and Universities Today?

LaGuardia Community College, where I have served as president for 11 years, hardly seems to be a “typical” institution of higher education. Housed in old factory buildings in the Borough of Queens in metropolitan New York City, LaGuardia serves over 77,000 students, with 17,500 students pursuing an associate’s degree in areas as diverse as occupational therapy assistant to philosophy, biology or accounting. An additional 60,000 individuals attend the College’s continuing education programs seeking hands-on skills and workforce training that range from learning enough English to become a hotel maid to entrepreneurs learning how to apply for a small business loan. LaGuardians are pretty typical urban community college students. They are mostly minority (36% Hispanic, 15% Black, 18% Asian, 11% white), and about half are traditional college aged (52% are 17-22) with a large percentage who are older (27% are 23-29; 18% over 30). They are studying business (26%) technology (17%), allied health (23%) and the liberal arts and sciences (34%). They are poor, with the majority living below the poverty level. And 80% or so of the incoming freshman class needs remediation in English composition, or mathematics or both.
despite having a high school diploma or a GED credential. One hundred percent of them commute to campus, over 90% work, and 20% are parents. The majority attend college part-time.

Compared with their community college counterparts, four year college students are more likely to be traditional aged, attend full time, be white, and be middle to upper middle class. Estimates are that about 25% of students in four year colleges need some type of remediation.

LaGuardia Community College will celebrate its 40th anniversary this year. Over those forty years, access to a college education for a typical American has grown, in part thanks to the disruptive innovation of community colleges and in part to federal policies like the G.I. Bill and Pell Grants, which opened doors to higher education tremendously. Enrollments have almost doubled, from under 9 million students in the 1970’s to over 20 million undergraduate and graduate students today. The overwhelming majority of US students attend public colleges (~75%), with 16% at private and 10% at for-profit colleges.

The last fifteen years have also seen far-reaching changes in who provides higher education, with the growth of the for-profit sector in the US jumping from 400,000 students in 1998 to almost 2 million in 2008. For-profit colleges enroll about 10% of the nation’s college students, but get about 25% of all federal student-aid disbursements, receiving $26.5 billion in 2010 (up from $4.6 billion in 2000). Of the top 10 recipients in the US of federal Pell dollars, seven are for-profit colleges. Students at for-profit colleges are very likely to supplement financial aid with loans backed by the federal government. For-profit colleges derive just under 80% of their income from the federal government.

While the for-profit colleges have benefitted their shareholders greatly (outperforming the Standard & Poor’s index by a huge margin), the payoff for individual students is less clear. Graduation rates at for-profit colleges remain quite low. For example, compare the for-profit University of Phoenix, Kansas City’s graduation rate of 8.8%, to the 42.5% at the University of Missouri, Kansas City. It’s not surprising, given that for-profit institutions spend a fraction of what public and not-for-profit institutions spend on instruction. Students at for-profit colleges, when they do graduate, do so at great personal cost. Twenty-five percent of for-profit BA degree recipients have a college debt of more than $40,000, compared to only 6% of public BA graduates. Even though students at for-profit colleges make up only about 7% of all federally-underwritten loans, they make up nearly 50% of all loan defaults.

Thus, changes in demographics and providers of higher education make the landscape of who enrolls in college, and where they enroll, quite different from when the policies and practices that establish the federal response to college—primarily helping students pay for college through the federally-supported financial aid system—were developed. It is time to recalibrate our financial aid systems to meet the needs of today’s college student and more wisely invest our very limited resources.

Financial aid is indexed to tuition, so that the colleges with higher tuition receive greater amounts of federally-funded financial aid. One radical suggestion is to divorce Pell dollars from tuition. Pell would no longer reward institutions that increase tuition year after year and eat up scarce federal dollars.

We also need to put funding where the students are. The nation’s financial investment in community colleges has been laughably low. They receive one-third the public funding that four-year colleges do to educate a more academically needy student body. Fewer resources mean fewer tutors, academic advisors, computers, and full-time faculty. Equally distributing Pell dollars to all students would help community colleges now bursting at the seams with students, while encouraging prospective students to enroll in lower-cost, high-quality community colleges. Another idea to consider is to reform the Pell program to reflect the needs of adults who are going to college, allowing Pell awards...
to be modified to reflect the longer “time to degree” it may take adult students and providing expanded tax credits to encourage adults to accumulate new skills and knowledge.

An even easier federal-level recommendation would be to give up the nostalgic notions of college-going practices that now frame how the US government collects information from colleges. LaGuardia Community College is required to report on only the “full time, first time students” who are attending, which represents less than 20% of the students served. The US government does not even try to measure students who enroll at colleges for workforce development—a number estimated to be over 6 million in community colleges alone. It would be a great benefit if the US government tracked the outcomes of students as they move from multiple high schools to multiple colleges.

Support the transformation of faculty roles through the use of technology

One of the realities that colleges and universities face is that the new global and technological imperative requires America to educate more of her people to a higher level than ever before. The bar has been permanently raised. It’s why America’s competitors in China and India have begun to invest so heavily in creating new colleges and universities. To accomplish a radical revision of educational philosophy and practice, governments and educators must arrive at a clearer understanding about how the basic requirements of society have changed in the post-industrial world. It is necessary to embrace the reality that, as more people go to college, the colleges awaiting them must be transformed if students are to succeed. The most effective way to do so is to harness the untapped potential of great faculty.

At the same time as technology was revolutionizing how Americans work, it also transformed scholarship. Remember life before Google? One used to rely on experts, reference materials, or exhaustive library searches to get information. In life before Google, it was the college professors who had the facts—they had done the research, read the literature, and connected the dots. A college professor could engage his or her students in a world of information they could only dimly imagine. But technology has altered the relationship between knowledge and the knower, erasing geographical and institutional boundaries, creating new kinds of communities, and underpinning work in completely novel ways.

Seemingly overnight, the specialized knowledge that was the provenance of college professors became available and easily searchable. Of course, just having the information available doesn’t mean all students can now learn on their own, no more than having access to libraries did in the past. The challenge is not finding the information, but rather helping students learn how to manage, evaluate and transform information into knowledge. For that you need faculty.

College faculty today face a two-fold challenge. First, they must be effective with the vastly differently skilled students in their classes. Because while those new students must be educated to a higher level of sophistication than ever before, they do not possess the academic skills of the smaller group of more elite students of the past.

Second, faculty must learn how to incorporate the ways in which technology has modified the very nature of learning. New technology is leaping ahead of pedagogy. Instead of lectures, students can now learn with online resources that are engaging and interactive. A student can view animated analyses of chemical processes or interactive charts showing the impact of changing values on mathematical concepts—things that used to require long hours and deep thought. In one short decade, the purpose of most college faculty—to transmit their knowledge and understanding to create informed critical thinkers fluent in quantitative, scientific, social and political spheres—has forever changed. Happily, the faculty role can now be supported and enhanced by tapping into technology in previously unimagined ways.
To elevate colleges and universities to the next level, the country must begin to invest in college faculty in a new way. Unlike high school teachers, who have scant training in a discipline but some in pedagogy (teaching practices), college faculty present the reverse. They are highly skilled in their discipline, but have almost no professional development in how to teach. Colleges set up their reward systems to promote faculty who perform well as scholars and researchers—almost never for teaching. Even at community colleges, which profess to value teaching, there is a dearth of research on how to teach well, or how to measure effective teaching. This is particularly important for faculty teaching the millions of academically challenged developmental students who need remediation in order to prepare for college. As the Bill and Melinda Gates Foundation points out, a problem is that developmental students far too often encounter “courses not taught with the student in mind, and with little effort . . . to ensure the course is more than a rehash of what the student failed to understand in high school.” A change requires a re-thinking of college faculty roles and responsibilities, and consistent institutional support.

To invest wisely in faculty development, it is necessary to combine the cost-savings and innovation of technology with student outcomes. Most professional development activities for faculty are one-shot conferences or workshops. The dissemination model consists of hoping faculty will try the new method upon returning to their campus. This rarely works. Instead, the federal government could be a catalyst for the new forms of professional development that are emerging around the country. One of the more exciting projects in supporting faculty development to improve remediation is a Gates funded project entitled Global Skills for College Completion (GSCC). The GSCC project focuses on capturing what successful developmental mathematics and English faculty do in the class using technology (online faculty portfolios, a searchable library of classroom practices, and a collaborative interactive dialogue of faculty), then linking changes in faculty practice to improvements in actual student outcomes.

GSCC’s use of new technology tools affords a deep look inside developmental mathematics and English classrooms in 14 different states. The results after three semesters of intensive study are very encouraging. The technological tools tap the faculty’s collective wisdom through a system of scholarly practice that integrates the doing of teaching with the research on teaching, using student work and student outcomes to document success. The final goal of the project is to develop a hands-on, totally electronic professional development process that allows faculty the freedom to identify their personal attributes and strengths while achieving better student outcomes. Ultimately, this can lead to a system of formal certification where the tens of thousands of faculty teaching developmental education receive appropriate credentialing. This is the kind of research-based, outcomes-focused professional development for faculty that is needed and well worth the investment.

As technology, both through online learning activities and increased sophistication of assessment techniques, makes possible a clearer connection between student outcomes and faculty performance, teaching effectiveness may gain ascendancy as a criterion for both continued faculty employment and scholarly recognition. It is possible to project a catalytic federal role in supporting investment in faculty. A federal program could pay college faculty (especially adjunct faculty) a wage bonus if they voluntarily become certified as expert developmental educators. Any certification would have to emulate the principles of GSCC, so that certification wasn’t just “book learning” but an actual demonstration of proficiency in teaching. With a minor infusion of dollars, the government would enhance pass rates in remediation by spurring the development of more effective faculty, ultimately leading to more Americans graduating from college.
Changing time and resources spent on remedial classes in community colleges to increase effectiveness

Developmental faculty are heroes, facing students every day who have graduated high school, but are unprepared for college-level work, afraid of mathematics, and confronting personal challenges. These faculty help almost half of the students achieve in a semester or two what 12 years of school could not. What if, instead of bemoaning the millions of dollars wasted, we acknowledged the pivotal role of remediation in re-claiming thousands of students each year? The power of raising the status of remediation could be a game-changer for increasing student success and faculty commitment. What if the US government established a five year program that created incentives for faculty who were able to increase the pass rates on their campus, linking successive years of funding with increases in student outcomes—sort of like the incentives given to doctors to serve in poor, medically underserved communities? A significant role for the federal government would be to work with the private vendors of assessment exams to create a national standard of cut-off scores. Right now, who goes into remediation is based upon nationally-normed tests, but cut-off scores vary widely.

To speed remediation on college campuses, it is important to create a different set of metrics and rules so that Pell grants, state funding and other support dollars become flexible enough to allow for innovation, intensity and the provision of wraparound services that help students stay in school and earn a degree. We currently provide federal financial aid and degrees based primarily on “seat time”—how long a student attends a specific class. As interactive authentic assessment of individual student competencies become more common, the ability to assign financial aid based on learning becomes possible. This might also include highly functioning assessments that take the place of transcripts, and assessments of expanded definitions of competencies, such as problem solving, interpersonal skills, or initiative, that re-imagine what is assessed and how it is represented.

Remediation and college completion could be accelerated by framing it within a social context. The federal government could provide incentives for local Community Based Organizations to work collaboratively with remedial students to provide integrated support services in a community that focus on college completion.

Conclusion

To undertake the necessary transformation of higher education, the country must do three things: (1) Respond to today’s undergraduates; (2) Restructure, not reduce, the investment in higher education; and (3) Re-imagine and support an American professoriate for a networked world. Only when US public policy follows the actual contours of the higher education landscape will we create the colleges and universities we so desperately need.
Transformation in Tough Times: Rethinking the Structures of Schooling for the Information Age

Dr. Karen Hawley Miles
President and CEO
Education Resource Strategies

In these tough economic times, systemic improvement of our public schools will not be possible without bold steps to contain escalating costs and restructure the current use of educational resources. Over time, traditional ideas of school organization have combined with legislated mandates, rigid funding categories, and contract stipulations to create very real barriers to using talent, time, and technology well in today’s school systems. Scarce dollars are tied up in automatic and unsustainable increases in salaries and benefits, legislated teacher-student ratios, class size limits, and inflexible time requirements, leaving little room for the type of investments that improve teaching and learning in the information age.

The Need to Restructure Resource Use

Real spending on public education has doubled in the last thirty years without significant changes in student experiences, performance, or basic school structures. We still see isolated classrooms, organized by subject and grade, in short rigid time blocks, when we know that different students learn at different rates and require different amounts of time and different structures. Eighty percent of these added dollars have paid for rising special education costs, smaller elementary class sizes, addition of non-core classroom staff and escalating healthcare and pensions. Notably, educator salaries (not including pensions and benefits) have not risen in real terms. Even with recent stimulus funds most school districts have been able to do little to advance reform, instead preserving existing jobs and layering dollars on top of flawed and antiquated cost structures. Districts spend an estimated 3-5% more each year before inflation just to sustain existing staff and contracts that include annual teacher salary increases, and on escalating benefits for both active and retired employees. When it comes to investing in innovation and educational improvement—in such areas as technology and information systems, teaching effectiveness, collaboration, and coaching—the hands of school and district leaders are tied. Current spending patterns and cost structures are not sustainable nor will they lead to transformative investments without the willingness by educational leaders and stakeholders to engage in new policies, incentives, and legislation aimed at a more productive use of resources (talent, time and technology).

Seven Restructuring Priorities for Transformation in Tough Times

Education Resource Strategies, the non-profit organization I help lead, created a framework for tackling antiquated cost structures and freeing unproductive resources for investment in sustainable improvement. These priorities have emerged from lessons learned over the last decade of work partnering with urban districts to spend money and organize talent, time and technology to create great schools at scale. The seven priorities are to:
1. Restructure one-size fits all teacher compensation and job structure to foster individual and team effectiveness and professional growth.

2. Rethink the standardized class size model to target individual attention.

3. Optimize existing time to meet student and teacher needs and extend where needed.

4. Redirect special education spending to early intervention and targeted individual attention in general education settings.

5. Maximize use of buildings and land.

6. Invest to support and develop leadership.

7. Leverage outside partners and technology to maintain or improve quality at lower cost.

In an upcoming article in Phi Delta Kappan, we focus on four of the most promising opportunities to leverage limited resources for 21st Century teaching and learning. Here we summarize these four areas.

1. **Restructure one-size fits all teacher compensation and job structure to foster individual and team effectiveness and professional growth**

    Research highlights the importance of developing and supporting effective teams and individual teachers, yet typical teacher compensation, job structures and school organizations do not reinforce these goals. Across ERS’s partner districts we see that teacher salaries more than double over a 30 year career. Over 80% of this salary growth accrues from adding more years of experience and educational credits. But, research shows that these factors are not strongly correlated to student improvement after the first 3-5 years of teaching experience or in teaching high school math and science. Figure 1 shows one typical district’s spending on total teacher compensation including benefits. This district spends a total of $500 million dollars on compensation, but less than 2% pays teachers for greater responsibility or better teaching results. With significant resources going to base salary and longevity, as well as benefits that comprise close to a quarter of compensation dollars, few resources are available to attract and leverage those contributors most capable of improving student learning.

    Transformation requires rewarding and retaining the best and brightest, differentiating skills, and placing teachers in roles and positions matched to student needs. Currently, most districts do not efficiently measure teaching effectiveness so that teacher performance could be linked to compensation, role, or assignment; and union contracts make out-placing tenured teachers difficult even if they underperform. An increasing number of state legislatures are addressing performance pay, last-in-first-out lay-off and tenure policies in efforts to eliminate poor performers and strengthen the mix of effective teachers. Going forward, districts and states must move beyond these first steps that focus heavily on using evaluation to fire the worst teachers and linking short-term test scores to small bonuses. Leading edge districts and states are working hard to design evaluation systems that capture a wide range of information on teacher results so leaders can help teachers improve and inform teacher assignment. Beyond giving bonuses for test results, linking salary increases to clear career transitions that are carefully reviewed and considered, as in a promotion in the private sector, will also help district leaders manage the mix of teachers at any given level and thus maintain quality at more predictable levels of spending.

    Even if we find ways to get the highest contributing teachers higher salaries earlier, this will not enable a significant increase in salaries for most teachers. There is emerging evidence that some of the nation’s best and brightest are not entering teaching because they can’t envision raising a family comfortably at these salary levels. Redirecting dollars from benefit and
pension spending will be a critical component of increasing the dollars available for salary. But, the simple math of the situation means that growing teacher compensation further without dramatically raising overall spending will require a combination of reducing and differentiating the salaries in certain categories of non-teaching staff and reducing total staff. This is one reason why we need to consider the next priority and rethink ways of grouping students and teachers as well as using technology more effectively.

2. Rethink standardized class-size models to target individual attention

Because they are easy to measure, lower class sizes have become a proxy for educational quality. Ironically, lower class sizes can work against teaching effectiveness when class size mandates result in the addition of less skilled staff rather than investments in teacher development or thoughtful targeting of individual attention. Instead of tying up significant dollars in rigid student-teacher ratios and across-the-board class size reductions, high-performing schools are breaking away from the single teacher, single classroom model to group students in different sized learning groups throughout the day, targeting group size and teacher skills to student needs and the subject matter.

The Charlotte-Mecklenburg school district has achieved remarkable results in several of its turnaround schools by raising class sizes slightly and reorganizing resources to create teaching teams led by expert literacy and math teachers. At Ashley Park elementary, teacher teams of two share responsibility for 40 third graders. With their coaches, teams organize time, grouping and lessons to respond to individual student progress each day. Special education teachers, teaching assistants, tutors and coaches join together during core subjects, so group sizes at any given time can vary from two students to more than 30.6 In addition, the emphasis on ongoing intervention for struggling learners has resulted in a significant drop in the numbers of students who are referred to and classified into special education placements.7

3. Optimize the use of existing time to meet student and teacher needs and extend where needed

Although there is much discussion of adding more time for students who need it, districts and schools rarely manage time as a resource or match the daily schedule to meet student and subject needs. Big differences exist across schools in the total amount of time scheduled for instruction because of differences in time allocated for getting to and from classes, free periods, study halls, lunch and activity periods. As they age, most students spend increasingly less time on core subjects with the neediest students often spending the least time of all in core subjects—especially by 12th grade.8 To counter this and respond to increasing pressure to ensure that students perform well in tested subjects, some schools, particularly in urban areas, have doubled or even tripled the number of periods struggling students spend in core subjects, crowding out electives. But, these trade-offs are only necessary if we envision that all periods are the same length, meet every day and that instruction must be provided in traditional ways. High performing schools are breaking out of the traditional rigid six to eight period school day. They vary time for students by day, by grade and by subject, extending school time in English and math while using time and community resources outside of the school day to engage students in non-core subjects and extracurricular activities.9 Daily advisory or intervention periods remediate and accelerate learning as students work with teachers in core content areas. In tight fiscal times, leveraging existing time can be a no-cost way to improve outcomes. Better and more frequent assessment of student learning creates opportunities to adjust time and content in much more targeted, and thus more cost-efficient, ways.
4. Redirect special education spending to early intervention and targeted individual attention in general education settings

Special education’s share of average district spending rose from 4% to 21% between 1970 and 2005, yet school leaders often leave special education programs untouched and unexamined, even when this means cutting deeply into other core educational programs.10 State and local policies and practices have driven wide differences in special education classifications from as high as 20% in Rhode Island to as low as 10% in Texas. This suggests potential to rethink special education practices and improve outcomes while lowering referrals and spending.11 More accountability for effective spending, higher program fill-rates, revision and better integration of Individual Education Programs (IEPs), and stronger early intervention efforts can reduce special education inefficiencies and unnecessary referrals.12 Syracuse City School District is attempting to reduce its 21% identification rate by improving student assessment and providing ongoing training in Response to Intervention13 methods to help more students remain in general education. Through a partnership with “Say Yes To Education,”14 the district is able to supplement intervention options for struggling students. Expanding dual certification of both general education and special education teachers will also reduce costs and improve service, allowing flexible grouping across classrooms and content areas for all students throughout the day. Finally, the district has dramatically reduced non-instructional spending by cutting administrative costs and the number of special education aides.15

The Role of Federal Lawmakers

Local and state policies and practices largely influence the availability and use of talent, time, and technology at the school and district level, but federal lawmakers can also play a role in leveraging increasingly scarce resources by:

- Linking funding to restructuring efforts and providing guidelines
- Identifying and sharing models of successful innovative school and district designs
- Creating more flexibility in resource use by investing to promote implementation and refinements of a Common Core of learning standards
- Investing to support integrated and longitudinal data collection that includes accurate and nuanced information on resource use that can be compared across states and districts

Linking funding to restructuring efforts and providing guidelines

Building on the success of Race to the Top (RTTT)16 in encouraging states to embrace common core standards and build new teacher evaluation systems, a portion of resources at the federal level could be made contingent upon making courageous and long-lasting changes in regulations, contracts and practices. Creating incentive programs, even when relatively small, also provide a way to educate the general public around both the urgency and ways to restructure. Some potential ideas include:

1. Productivity challenge grants — Cover transition costs to help states and districts move to new structures by tackling such areas as salary and workforce transitions, teacher evaluation training and technology purchase that frees people from less skilled roles.

2. Teacher evaluation systems — Fund efforts to develop and implement more sophisticated evaluation systems and teaching job structures in order to attract the nation’s brightest to careers in teaching and reward contribution through salaries, benefits, and pensions. Ensuring funding for evaluation and dissemination of results of these
efforts will be critical as current efforts are quite disparate and vary in quality.

3. Pre-Kindergarten — Fund Pre-K capital investments to equip elementary school buildings and provide additional ongoing Title I allocation to Title I schools that implement for a transition period as cost savings benefits accrue over time. While spending on Pre-K looks like incremental educational spending, there is broad consensus that such spending increases outcomes and reduces spending on special education, allows larger K-3 class sizes, and fewer students repeating grades. This kind of investment that ultimately saves costs, but costs more in the short-term, is extremely difficult for individual districts or states to make.

Identifying and sharing models of successful innovative school and district designs

Fund research efforts to document and share lessons from cost-effective financing and delivery models that generate high performance at individual schools and across systems of schools. The nation has a growing number of examples of high performing schools, but fewer examples of high performing school systems especially among those serving high poverty students. Freed from most restrictions, some charter schools and innovation schools inside traditional districts are finding new ways to organize. There are also emerging examples of effective school systems which are able to serve critical functions and if well run save taxpayers money because they can create economies of scale and leverage system resources for higher, more consistent quality. For this reason, we need to better understand how high performing school systems organize resources and how they are tackling outmoded structures. And, in systems that include both charter and traditional district-run schools, we need more information about how to structure funding systems with dwindling numbers of students to avoid saddling the students in district-operated schools and taxpayers with a large fixed cost structure.

Creating more flexibility in resource use by investing to promote implementation and refinement of a common core of learning standards

If we are going to move away from standardized, K-12 classroom structures, then states will need to be clearer about defining ambitious learning standards that are worth teaching toward and testing and ensuring that all students reach or exceed them. Common standards combined with effective assessment unleash incredible potential for innovation and sharing across the nation. Such standards encourage innovation because assessment, instruction and technology tools that organize around one set of standards will be easily transportable, encouraging innovators who might not have perceived a large enough market of “like schools or districts.” These same standards encourage efficiency and accountability because we will be able to unlink inputs from outputs, intervening when students aren’t reaching standards. If we combine collection of outcome data with nuanced information on resources, we will be able to support states, districts and schools around how much they need to spend and how they might best spend it.

Investing to support integrated and longitudinal data collection that includes accurate and nuanced information on resource use that can be compared across states and districts

Race to the Top initiatives encourage investment in longitudinal data systems that link teachers to outcomes. As an extension of RTTT’s goals, we have an opportunity to encourage better decision-making at the local level and learn which practices are more cost-effective by creating more visibility into district-
level resource use and outcomes. States already require districts to publicly report a wide variety of data—refining the data that is requested can facilitate more thoughtful discussions and decision-making about resource use without increasing the burden on schools and districts. The federal government might pilot integrated data collection and common reporting in several states aimed at providing cross-state comparative data that links resource use to individual students. Reliable comparative data would help districts and states by establishing some objective benchmarks for spending levels that link to outcomes. Currently, spending, staffing and time allocation data are not consistently coded across states and do not link to individual students or outcomes. This precludes analysis and benchmarking that could support political consensus on the need to cut or raise spending.

**Conclusion**

We face a promising, but difficult moment in the history of public schooling in America. A recent McKinsey report on the highest performing school systems in the world highlighted that many of the nations and districts that outperform most U.S. schools seized on moments of financial or leadership crisis as an opportunity to raise and clarify their aspirations and goals for student learning. This includes overhauling the way they invested—especially in teachers, leaders and curriculum—to achieve it. We have reached a point where the industrial-age structures for our school systems no longer match our current workforce expectations that include higher salary levels, flexibility, ownership and collaboration. Nor do these structures support the opportunity to use technology to dramatically increase quality and reduce cost if wisely integrated. Our increasing ability to measure learning outcomes in sophisticated ways creates opportunities to customize learning so students who enter school far behind and those who enter with an edge get what they need to accelerate learning while we can be sure, with national standards, that all students reach information age levels of knowledge. The question before us is: Will we restructure federal investments as well to incentivize, promote and sustain transition to new structures across even the most disadvantaged states and school systems or will we leave it to chance?

**Endnotes**

2. “Non-core” classroom staff includes staff not involved in teaching mathematics, English language arts, social studies, science and foreign languages.
7. ERS Charlotte-Mecklenberg Analysis, January 2011.
“IEP” or Individualized Education Program is the document that records the special support and instructional services required for a child with special needs. Parents, teachers and school administrators must agree to this plan, but have flexibility in how they define the services and resources required to meet learning goals.

Response To Intervention (commonly abbreviated RTI) is a method of academic intervention used in the United States which is designed to provide early, effective assistance to children who are having difficulty learning. Many districts have found it to be an effective alternative to special education.

Say Yes to Education, Inc. (Say Yes) is a national, non-profit education foundation committed to dramatically increasing high school and college graduation rates for our nation’s inner-city youth. www.sayyestoeducation.org


Race to the Top, abbreviated R2T, RTTT or RTT, is a $4.35 billion United States Department of Education competitive grant program designed to spur reforms in state and local district K-12 education.

Mourshed, Mon, Chijioke, Chinezi and Barber, Michael How the world’s most improved school systems keep getting better. McKinsey &Company 2010
A Return on Our Education Investment

Each year, the United States invests about $500 billion of public funds—and $4 billion in philanthropic funding—into its public K-12 education system. Primarily, that annual investment supports over three million teachers to spend an average 180 instructional days working with nearly 50 million students.

Unfortunately, according to the most recent Program for International Student Assessment (PISA) study, the United States may not be spending its dollars and time as effectively as more successful nations spending less. Despite spending more money on education than almost every other country in the study, the United States remained just average in reading and science, and lagged in mathematics on the global scale.

At the same time, calls for even more funding—to support decreased class sizes, increased technology, and teacher performance pay—dominate the airwaves. Before increasing its financial investment in public education, the United States must evaluate how strategically current dollars are spent.

Collaborating Towards a Common Goal

Uneven or poor student performance is not the problem, but rather the result of multiple root causes. Unfortunately, most of the existing proposed solutions promote parochial agendas. Educators advocate for money or assert that kids can’t learn. Business leaders criticize the lack of a skilled labor pool. Policy makers brand educators as those who won’t do as they are told. Students shun coursework they deem unrelated to their futures.

Effective collaborations occur when people and groups both inside and outside of the formal channels are inspired toward a common goal—neutrally defining a problem and building solutions collaboratively. Therefore, the nation must stop personalizing the problems and solutions to education through the lens of government, business, labor or student perspectives. The nation cannot merely legislate, regulate, mandate or even spend its way out of performance disparities—but instead should collaborate toward an effective solution.

None of the successful countries in the PISA study rely on constituency-driven solutions like performance pay, charter schools or vouchers for success. Rather, the highest performing nations support uniform, high-quality standards, linked to key gateway assessments—the “north star” from which all else aligns. Strategies that guide toward a “north star” destination effectively align policy, differentiate resources and build capacity of the system to position for student success. With education budgets contracting and unlikely to recover, strategically repurposing and prioritizing current spending should be the United States’ top priority.

The country has just begun to clarify its “north star.” Studies show that graduating
students from high school must mean more than granting paper diplomas. While citizens expect schools to sustain the country’s economic engine, more importantly, they want graduates who can fully participate in civic life. A critical component of education must focus on preparing students for that active engagement in society. A recent study from American College Testing (ACT) affirms college and career readiness goals serve these shared values well—providing graduates a gateway to the future and helping the United States stay globally competitive. Graduating students both prepared and inspired to thrive in college and careers creates shared value for all stakeholders of the education system and provides a shared goal to work toward.

In order to chart a path forward, the country must understand its baseline. Any mapping program requires a starting point—not just the final destination—to strategize the best path toward success.

Shifting Our Focus: From a Geographic Lens to College-Readiness Metrics

While education spending is important, the highest performing nations prioritize spending differently. For example, the United States is the only industrialized nation spending the most money on its most advantaged students. Even more troubling, a 2011 study identifies the impact of poverty (rather than the prevalence) as greater on students in the United States than in a majority of tested nations.

Historically, the country has sorted its more than 14,000 school districts into urban, suburban or rural caches and focused policy, research and programmatic interventions to address what is wrong in urban districts. While this particular geographic designation once served as a reasonable proxy for the location of the nation’s poorest and most underperforming students, new immigration patterns indicate a reverse migration is underway—and that the suburban systems are at highest risk for decline.

The current strategy is not only expensive, it’s not working. Without a shift in strategy, the nation is sure to see nearly all of its schools—urban, suburban and rural—follow the urban pattern. Rather than continuing to view districts through this outdated geographic lens, a new focus on performance on the college and career-ready trajectory could provide a better snapshot of where school systems across the nation stand in preparing students for future success.

**Performance Benchmarking**

A recent McKinsey & Company study established a Universal Scale that evaluated a variety of international benchmarks to classify school systems within a bell curve—poor, fair, good, great or excellent. Further, the study emphasized that strategic interventions for successful growth should be applied differently within these five categories of performance. Therefore, a school system needs to know where it is today in order to set goals and strategize improvement.

An early challenge to creating and embracing a version of a universal scale is identifying the measure. Currently, the United States does not have a uniformly administered assessment of college and career readiness. A solution is to consider some of the measures students, families and colleges already support. The existing college readiness Scholastic Aptitude Test (SAT), Advanced Placement (AP), and ACT exams are not only taken by millions of students each year but also serve as a proxy for career readiness—with these college and career ready standards recently benchmarked to the PISA standards.

Unfortunately, as most students or individual districts must pay for these exams, the pool of test takers is limited to those with the financial means. The emerging Common Core in the United States will be a good catalyst toward a unified approach and language around academic subjects and will likely support higher quality curriculum. College readiness assessments can likewise ground our dialogue with a
clear consensus about where we are beginning and how we measure progress.

**Aligning Resources to Objectives**

Like the systems across all five performance bands studied in the McKinsey report, policy and related resources from federal, state or local funds could be aligned to strategies that uniquely support **striving for improvement** for those schools in the lower performance bands and strategies that uniquely support **sustaining results** for those in the top performance bands. This tiered approach saves money and time by prioritizing what works at that particular stage of growth rather than uniformly mandating and funding what is counterproductive at later stages.

Further, this tiered approach to policy and strategy can create “networks” of schools sharing best practices and solving similar challenges—wherever they are located. For example, districts dealing with the integration issues of reverse migrations can foster collaboration about effective strategies to extend their record of academic success to all students, rather than experience declining performance across the board.

**Employee Engagement—The Most Underused Resource in Education**

While it’s tempting to focus only on the rational elements of a well-crafted plan, the leader of any organization will affirm it is not the plan that does the work, but the people. Additionally, no plan is accomplished by attacking the competencies or the intentions of the people doing the work. Full-scale success can only occur in a culture of the best people doing their best work.

Policy, research and governance have successfully created the national mandate, but in the process have marginalized the single most important resource for achieving it: the educators who do the work. It is both of these elements working together—the integrated **structure** of mission, means and measures and the evolution of employee **culture**—that bring the vision to life. In fact, employee engagement—from leaders, teachers or service personnel—is likely the greatest untapped resource in the education landscape.

In order to stimulate engagement in students, leaders must also create and support a similar engagement among our educators. System-wide goals must be translated into intuitively actionable roles and responsibilities for each employee. Getting from “what do we do” to “what am I responsible for,” specifically identifies how each position within the system connects to goals for student achievement.

Kindergarten teachers ensure students have sufficient early literacy skills for later college and career success. Bus drivers are responsible for students arriving at school both safely and on time. Cafeteria workers serve nutritious meals on schedule so students have time to eat before returning to class. When culture evolves to this level, spending is seen through a different lens. Rather than protect a favored staff member or pet program, the culture will begin to eliminate what isn’t supporting shared goals for the students.

**Building a Culture of Respect**

Culture doesn’t just happen. It is created through a set of shared experiences and beliefs. To change a culture you have to change the beliefs, and to change the beliefs you have to change the experiences. Education culture has been the scourge of public debate for years. Language such as “reform,” and “takeover,” and disparaging and often one-sided stories and movies lead to feelings of fear and persecution, creating defensiveness in school systems rather than openness and flexibility. Politics, whether local or national, usher new changes every few years with promises of money for trying new programs and ideas. Vocal constituencies, often with competing interests, insist on reactions to their many demands. What results is a “gotcha” culture rewarded for **activity** rather than **productivity**. Unlike education, no other industries
undertake transformation efforts by disparaging their workforce publically or by depriving them of the key resources to do their jobs.

Just as with student performance, there is a comparable trajectory for workforce culture. Embraced by the private sector for years, employee engagement measures are well researched and offer statistically significant contributions to success. Attention to psychological well-being moves individuals and organizational culture from a “What do I get?” mindset to “What do I give?” “Do I belong?” and “How can we grow?”

Why does this matter? Engaged employees are more productive and working for more than their paycheck—they are psychologically committed to the work. Alternatively, actively disengaged employees are described as physically present, but psychologically detached—and their displeasure can be contagious to colleagues. Policy, funding and strategy decisions should focus on building a culture of engagement to get the best return on education investment dollars and improve the overall school system. Engaged employees working in an environment with like-minded colleagues who feel their work is valued will, like the McKinsey research suggests, naturally attract the best candidates, demand professional growth and cultivate peer-led learning and innovation. More importantly, employees who are valued and trusted team members and regularly included in key decisions are more likely to make sacrifices and more willing to identify and support budget contractions. Being part of the process builds commitment, a far better outcome than compliance.

**An American Success Story**

While international success stories are important, there are some American successes, too—those “great” or “excellent” systems that have not only adopted a single college-ready goal, but have also built a strong and integrated structure around that mission and created an engaged culture of employees who can deliver promised results in record numbers.

One such system is Montgomery County (MD) Public Schools (MCPS). Montgomery County is the 16th-largest school district in the United States, and the largest in Maryland, neighboring Washington, D.C. Over time, this district transitioned from less than 20 percent to over 60 percent minority students. Its 145,000 students now represent a diversity of backgrounds (37.2% Caucasian, 23.4% African American, 23.4% Hispanic, and 15.7 Asian American). But this district’s performance soared rather than soured, as evident in these results:

- 90% of kindergartners enter first grade with essential early literacy skills
- 88% of third graders read proficiently
- 90% graduation rate (highest in the nation for large districts for 3 consecutive years)
- 66% Advanced Placement Exam participation rate, 71% scoring 3 or higher
- 1653 average combined SAT score, compared with the national average of 1509

MCPS was the first district in the nation to adopt a clear metric for how to measure success—80 percent of students would graduate college ready by 2014, as measured by college-ready SAT, ACT and AP scores. Rather than building “up”—as the old models of education were crafted—MCPS instead mapped college and career readiness objectives backwards to Pre-Kindergarten and was the first system to fully integrate all of the known best practices into one system, yielding nearly unparalleled success.

In 2011, the district was awarded the Malcolm Baldrige National Quality Award. In 2010, it was recognized as a finalist for the Broad Prize in Urban Education. The MCPS journey and success story are the subject of numerous research studies, articles, Harvard Business School Case Studies and the book, *Leading for Equity* (Harvard Education Press). Several highlights of the MCPS story include:
• A vertically articulated PreK-12 curriculum and assessment model that incorporates a single college readiness goal, comparable to the emerging common core.

• A professional growth system (PGS) for all categories of employees—administrators, teachers and supporting service workers. The PGS includes a widely praised Peer Assistance and Review (PAR) program that exits underperforming employees.

• The research-driven “Seven Keys to College Readiness,” compiled from National Student Clearinghouse data, represents a robust representation of key milestones met by successful college graduates from the system.

• Innovative practices emerging from the schools and other employee groups, including a new integrated K-5 curriculum (supported by a Department of Education Investing in Innovation Fund development grant) and Professional Learning Communities that disseminate best practices within schools and across the district.

• Teachers, administrators and service workers voluntarily gave up $90 million in scheduled pay raises in a single year to preserve funding for programs that were making a difference in the lives of students in their care.

Beneficial Relationships Toward Success

So what else contributed to this story of success? Leadership credits internal and external collaboration as a strategic imperative. Integrating the leadership of employee association groups into the decision making process fostered buy-in from the 22,000 person team tasked with the work. Leaders also maintained a fierce persistence in resolving conflicts between the college-ready goals and the various compliance functions with federal and state testing. These activities highlighted the disconnect between policies targeted for “striving” systems versus what was a good use of time and money for this system focused on “sustaining” high performance.

New ways of working with the business community also emerged. Serving as trusted advisors, business professionals—mainly from large national and internationally acclaimed companies—began to see school challenges as common to those faced by their own organizations and were able to suggest multiple strategies and techniques for educators to consider. Broad topics such as mission definition, strategy and measurement systems ultimately drove the creation of quantified outcomes, such as the “Seven Keys to College Readiness” analytics, and improvements to the employee on-boarding process and overall engagement. Additionally, schools benefited from a variety of pro bono consulting projects from the businesses involved.

Combined with the district’s own efforts to repurpose spending, efficiencies and effectiveness gained from these efforts yielded millions of dollars of savings and substantial improvements in academic success. For partner organizations, understanding the impact of contributions, whether financial or expertise-based, fueled continued involvement and success.

Replicating and Scaling American Success

Replication and scaling this story of success requires more than making information and research available, as most policy groups do. It requires more than making money tied to single, favored solutions available, like many foundations do. And more than sending classroom volunteers, supporting branded initiatives, sponsoring events—or criticizing educators to “be more like business”—like businesses often do. We have a path forward: One grounded not only in research about what works best on the world stage—but also from successful efforts such as the Montgomery County Public School system. Government has the power to strategically align policy. The education sector has the workforce drawn to the mission of student success. Business has an execution-oriented skill
set. Foundations and policy groups have the supplemental resources. Strategic policies and collaboration are absent on the national stage, but could effectively support three fundamental goals:

- Adoption of national college and career ready goals with funded, external measurements;
- Strategic differentiation of policy, funding and interventions for “striving” school systems verses “sustaining” school systems; and
- Attention and sensitivity to the impact of policy and rhetoric on employee well-being and its role in student achievement.

The United States must make more strategic investments of education resources and promote increased collaboration to better prepare and inspire its students to thrive in college and careers.
Reimagining Science Education

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On July 14, 2011 Google announced the winners of their international science competition. Three young women were chosen. In each project, we see not only the student’s clear aspirations to use science to solve problems of consequence, but also how they used resources from their entire community, beyond simply their schooling, to engage with these challenges.

Lauren Hodges, who won in the 13-14 age group, studied the effect of different marinades on the level of potentially harmful carcinogens in grilled chicken. Her interest in this topic was triggered when she read about a lawsuit brought by the Physicians Committee for Responsible Medicine (PCRM) against seven fast food companies for not informing customers of the potential risk when consuming grilled chicken.

Naomi Shah, the winner among 15-16 year olds, conducted research to determine whether improving indoor air quality can reduce people’s reliance on asthma medications. Naomi’s interest in science was sparked at an early age through camps at the Oregon Museum of Science and Industry and LEGO Robotics competitions. She turned to science and engineering to come up with new ways to improve living conditions and eliminate unnecessary expenditures for health care.

Shree Bose, the 17-year-old Grand Prize winner, discovered a way to improve ovarian cancer treatment for patients when they have built up a resistance to certain chemotherapy drugs. Shree was inspired to research cancer after her grandfather died from the illness two years ago.

In reading their bios, it is apparent that these young women had their curiosity about science instilled at an early age. They have taken advanced science courses, attended enriching science camps, participated in numerous science competitions, been supported by family members and other caring adults who have nurtured their success, and have been rewarded and recognized for their accomplishments. As they prepare for college, and ultimately entering the workforce sometime within the next decade, they have exceedingly high expectations for themselves; they know what they will major in as undergraduates, and they talk about pursuing PhD research programs. They each fell in love with science at an early age and discovered that it is a way of looking at the world that equips them to solve problems and address challenges that have a direct human impact. Most important, they have succeeded at marrying their convictions and enthusiasms with opportunities to advance. As one of my colleagues noted: “It’s funny how girls have that uncanny ability to find problems worth solving.”

Contrast the essential ingredients of these stories with what we know about science education in our nation’s schools, how it is delivered by teachers and texts, and how it is received by students. Recent national studies call our attention to the fact that at the elementary level sci-
ence is barely being taught. More than 8 hours of instructional time is devoted each week to the teaching of English Language Arts (ELA) and over 5 hours per week to math; science is taught for less than 3 hours per week. The situation is worse in schools that have been identified as in need of improvement, where science is entirely eclipsed by the subjects that students will be tested on, and these are the very same schools that are likely to have higher levels of poor children and children of color. There is now a growing body of evidence that indicates grade-level, high stakes testing is heavily biasing the curriculum toward the teaching of tested subjects and away from less frequently tested subjects like science. Further, when science is given time during the school week, students are much more likely to be memorizing information presented in textbooks and answering questions at the end of the chapter than engaging in the kind of real-world problem-solving exemplified by the Google science girls.

Looking at this dynamic, we need to be wary of what might seem to be the obvious solution: making sure science is tested the way math and ELA are. Adding more science tests will not remedy this problem anymore than the testing in math and ELA have helped in those areas. Testing does not typically motivate engagement, passion, creativity, and innovative thinking. A quick look at the countries whose children outperform the U.S. on the Organisation for Economic Co-operation and Development (OECD) Programme for International Student Assessment (PISA) shows that none of them do anywhere near the amount of testing that is done in the United States. Some of the top-performing countries do national testing, but at the gateways only—e.g., upon exiting elementary or entering high school. None have grade-by-grade national tests.

It is time to acknowledge that as a consequence of the focus and implementation of No Child Left Behind there has been a decline in science teaching and learning of a sort that we have not seen in the modern era. We do not need any more commissions or studies to tell us what is strikingly evident—children of the NCLB era, who entered Kindergarten in 2003 and had little or no science education for the next seven years, are not going to do well in science in middle school or beyond. We are losing an entire generation to science illiteracy.

Yet science literacy is essential in the 21st century. President Obama has highlighted the need for improved national science education, stating “All American citizens need high quality STEM education that inspires them to know more about the world around them, engages them in exploring challenging questions, and involves them in high quality intellectual work.” According to a report from the Center on Education and the Workforce, there will be eight million job openings in STEM-related fields by 2018, yet the U.S. continues to lag behind in student achievement in these areas. In 2009, PISA, measuring the skills and competencies of 15-year olds, found that U.S. students ranked 17th of 34 developed countries in science and 25th of 34 in math. The same study revealed that the U.S. has among the most unequal performance in the world, with achievement levels highly dependent on socio-economic status. Low-income and minority communities are especially hard-hit by lack of access to high-quality science resources. The results from the 2009 National Assessment of Educational Progress (NAEP) drive home the severity of the problem—only 18% of New York City’s 4th graders and 13% of 8th graders performed at or above the proficient level in science.

The situation is most dire among low-income and minority students. This is evident in a notable absence of underrepresented groups such as women and people of color among the professional ranks in science and engineering fields. As of 2010, racial and ethnic minorities represent only a small proportion of those employed in science and engineering occupations in the United States. Collectively, blacks, Hispanics, and other ethnic groups (the latter category includes American Indians/Alaska Natives) constitute 24% of the total U.S. popu-
lation, 13% of college graduates, and only 10% of college-educated individuals employed in science and engineering occupations. This gap is increasingly urgent in the current economic crisis, where science-related fields, including education and health services, are among the only industries showing job growth.

It is highly probable that over the next six years as “Generation NCLB” goes through high school we can expect banner headlines about continuing declines in science learning including a drop in the number of students taking advanced level courses in subjects such as biology, chemistry, and physics. That realization will be a precursor to the hue and cry from colleges, four years later, about the need for more remedial science and the falling number of American students majoring in sciences of all types. In a country that is obsessed with talk about systemic solutions, sustainability, and scaling, it is curious that no one seems to have realized where our narrow focus on math and ELA, and our heavy-handed emphasis on grade-level high stakes testing, would take us. On the other hand, we do seem to have successfully scaled a system nationwide that has led to a sustained level of decline in science learning at a time when we need just the opposite.

While the endpoint of our current trajectory is clear, the future could be—and must be—different. We know what can work to motivate children in schools. Perhaps the greatest asset in redirecting our course is children’s innate curiosity about the world around them. As Naomi Shah notes in her bio, her first word was “why.” Indeed, children are born curious and come equipped with a desire to learn that rivals even the most determined scientist. Early in school, however, this spark—what psychologists have dubbed intrinsic motivation—is all too frequently extinguished by the extrinsic goals and expectations of school. Fortunately, there is research-based evidence that says it is possible to rekindle this natural motivation to learn by designing environments that are supportive, that engage learners in meaningful activities, that lessen a student’s anxiety and fear, and that provide a level of challenge matched to students’ skills.

A National Research Council report, Engaging Schools, chaired by Deborah Stipek, Dean of Stanford’s Graduate School of Education, determined that students can be emotionally engaged in learning if simple principles are followed: if subject matter is connected to students’ personal lives and interests; if students have opportunities to be actively involved in solving or designing solutions to novel and multidimensional problems, doing experiments, debating the implications of findings, and working collaboratively; if students have multiple opportunities to earn a good grade (by rewriting papers or retaking tests); if attention is drawn to the knowledge and skills that students are developing, not to grades or scores; and if all learning and skill development is celebrated, whatever the level. Think about the Google science girls and how their experiences and opportunities exemplify these very principles.

As the Carnegie Corporation notes in their report, Excellence and Equity in Mathematics and Science to Transform Education, there is widespread agreement among policymakers, educators, and other stakeholders that all students, no matter where they live, what educational path they pursue, or what career they choose, need to be STEM-capable to drive future innovation and to contribute to the rapidly changing global economy. To meet this charge, schools have been challenged to dramatically redefine mathematics and science education to support multiple strands of inquiry and exploration across the curriculum so that students: experience excitement, motivation, and interest with respect to the natural and built world; develop and use scientific explanations, concepts, and models; generate scientific evidence to understand issues; reflect on science as a way of knowing; participate in science practices (e.g., presenting their findings); and identify themselves as science learners capable of doing science.

The Carnegie Corporation’s Institute for Advanced Study Commission on Mathematics and Science Education argues that for such a
transformation to occur we must move away from the current system of “telling” students about science to one that helps students gain critical problem-solving and inquiry skills in the context of relevant, real-world, interdisciplinary problems. While it’s clear from the Commission’s research that young people care deeply about contemporary STEM-related problems and are motivated to solve them (e.g., health and global warming), we need to develop learning practices that can stimulate students’ passions for science and methodologies that teachers can use that motivate students and support deeper learning.

The newly released Framework for Science Education, published by the National Research Council and supported by Carnegie, seeks to deeply connect scientific practices with the learning of content in ways that will nurture students’ passions for science. The Framework lays the foundation upon which a new generation of science standards will be developed. Recognizing that science is the key to solving the world’s most pressing challenges, the Framework seeks to ensure “that by the end of 12th grade all students have some appreciation for the beauty and wonder of science; possess sufficient knowledge of science and engineering to engage in public discussions on related issues; are careful consumers of scientific and technological information related to their everyday lives; are able to continue to learn about science outside school; and have the skills to enter careers of their choice, including (but not limited to) careers in science, engineering, and technology.” The framework charts a new and important pathway for science learning by recognizing that content learning must be intimately coupled with the practices of science, and build students’ understandings and appreciation of the scientific enterprise over multiple years.

Interestingly, much of what is being suggested in many of these reports is already being successfully deployed in science centers and other informal learning environments, and we need to find ways to connect the world of formal and informal science learning. Several decades of school reform initiatives have taught us that schools cannot and should not go it alone. At a time when schools face shrinking resources and growing demands, reversing declines in science learning will require leadership from civic institutions that partner with families, communities, and schools. We know the critical role that informal science learning experiences play in igniting students’ passions and in fostering deeper learning of science content. Whether it’s PBS shows like Sid the Science Kid or Dinosaur Train or the technological literacy initiative at the Museum of Science in Boston, the National Research Council report on Learning Science in Informal Environment found that informal science learning promotes diversity and broadens participation and that non-school environments have a significant impact on science learning outcomes among historically underrepresented groups. Significantly, the recently released PCAST (President’s Council of Advisors on Science and Technology) report on K-12 STEM Education for America’s Future, calls for better integration of informal and formal science education. The PCAST report not only calls for better coordination of STEM education activities, but also suggests that every middle school and high school should have a partner in a STEM field, such as a research organization, college, university, museum, zoo, aquarium, or company, that can bring STEM subjects to life for students.

Science centers in particular—of which there are 347 in the United States—are well positioned to play a leadership role, offering rich and engaging education programming and inspirational exhibits that are linked to classroom curriculum. Science centers offer a diverse ecology of engagement strategies, from kinetic to contemplative, from experiential to instructional. The thread through all of these strategies is unpressured exploration and invention, the characteristics that define engaged and passionate learning and lead to creative thought and innovation. The diversity of this ecology offers an unparalleled laboratory set-
ting to explore and support the impact of different strategies on different learners, and positions science centers to serve as potent innovation partners for science learning in the formal education sector.

It is increasingly evident that organized educational activities outside the classroom are necessary to strengthen core-learning skills, spark new interests, and promote greater enthusiasm for science among today’s youth. Further, informal science learning organizations are especially well suited to serve as capacity building and implementation partners in the reform work of K-12 education. As we seek to create a science infrastructure in this country that aspires to meet the President’s goal of high-quality, inspiring STEM education for all, we must ensure that there is broad-based coordination and input on the part of elected officials, local school districts, administrators, teachers, and science centers, and others in the informal STEM sector. Strategies that take into account the broader STEM learning ecology have the greatest potential for success.

If we are to develop more passionate, engaged, and highly qualified STEM learners among today’s youth, the implementation of policies and programs that support deep partnerships across formal and informal education sectors is key. We need to change the traditional pattern of funding that goes exclusively to either formal or informal and find ways to leverage funding that can bring the two sectors together. Some examples might include:

1. Allowing nonprofit, informal education institutions (such as science centers and museums) with a proven track record of providing quality teacher professional development programs to directly compete for Title II teacher quality funds;

2. Leveraging the federal government’s $1.1 billion annual investment in “21st century community learning centers” to encourage the states to seek non-profit partnerships that promote innovation in STEM learning;

3. Supporting science center and museum eligibility in the President’s initiative to recruit, prepare, and support 100,000 new math and science teachers through newly established alternative certification programs for both pre-service and in-service teachers;

4. Supporting the importance of informal education in advancing educational innovation by endorsing the sector’s eligibility in all federal agency STEM reform initiatives; and

5. Encouraging the National Science Foundation and/or the U.S. Department of Education to establish national research and development centers built around major STEM learning challenges (e.g., underrepresented populations, effective teacher professional development, learning technologies, etc.) and to ensure that informal learning institutions are eligible to compete; the existing infrastructure of the Regional Education Laboratories could be utilized for this purpose.

By design, informal learning environments such as science centers are inherently “low-stakes,” making them ideal environments in which to develop, test, and iterate new models of teaching and learning. At the New York Hall of Science (NYSCI) we have committed ourselves to serving as an innovation partner for the formal education sector by launching several initiatives that stimulate children’s innate curiosity and tendency to be critical thinkers.

The Center for Play, Science and Technology Learning (SciPlay) enhances students’ understanding of and engagement in science by harnessing the potential of play. SciPlay’s intent is to encourage more students to enter and remain in the STEM career pipeline by blurring the boundaries between play and learning—between tinkering and thinking—resulting in a positive impact on students’ attitudes and achievement in science. SciPlay identifies informal learning experiences that are broadly accessible and builds easy-to-implement exten-
sions of these experiences for the classroom. For example, a simple playground slide can be enhanced with motion sensors, and students given a goal and rules for scoring such that the fun of repeatedly sliding to win the game at the same time motivates a series of experiments exploring frictional force. The model also incorporates a small-scale computer application (a “digital app”) that simulates the game experienced in the informal setting, allowing students to explore quantitative data logged automatically during earlier game play and also supporting them in generating new data. The digital app supports students doing inquiry in the classroom in a way that continues to be fun and engaging, all the while helping students formalize the science concepts.

NYSCI’s Design Lab is a venue where informal science educators and classroom teachers collaborate on developing new lesson plans and resources that engage K-12 students in the problem-solving process that is central to engineering and technology. With Design Lab, NYSCI is making a significant investment in the transformation of STEM learning locally, regionally, and nationally, offering K-12 teachers a collaborative space where they can create, test and assess design-based approaches to teaching and learning STEM. Through the design process, one learns how to identify a problem or need, how to consider design options and constraints, and how to plan, model, test, and iterate solutions to vexing problems, making higher-order thinking skills tangible and visible. Design-based activities are intrinsically motivating to teachers and students because they engage the desire to learn how things work so that we can make new things that work better. Engaging in activities, such as designing a model boat that can float carrying a given weight, creating experiments with hand-built rockets to determine the most effective structure, or exploring possibilities for alternative energy sources, all help learners develop deep conceptual understanding of the knowledge and principles of a domain and support the development of self-guided inquiry skills that are often difficult to teach.

Such initiatives respond directly to the recommendations of the new science Framework and reflect the findings of many recent commissions looking at the future of science education. Just as important, they are aligned to the empirical evidence we see in the experience of the Google science girls. Successful engagement in science learning builds on children’s natural curiosities and positions science as a tool that can be used to address the world’s most pressing challenges.
A world changed forever

The world for which we are preparing our youth is qualitatively different from the industrial world in which our public school systems were created. Consider three fundamental shifts that have forever changed the world and the knowledge and skills students need to be successful in a new global era: 1) the global economy and changing demands of work; 2) the global context of national security; and 3) unprecedented global migration.

The “flattened” global economy

According to the United Nations, between now and 2025, the world population will increase by 20% to reach 8 billion. Ninety-seven percent of this growth will occur in developing nations. In 2025, 61 percent of the world population will be in Asia. Concurrent with population growth, nearly one-and-a-half million people move to cities each week, almost all in developing nations. An analysis by McKinsey & Company shows that the number of “megacities” of over 10 million inhabitants will rise from 18 in 2007 to 40 by 2025, with all of the increase taking place in Asia, Latin America, and Africa. With these shifts comes a huge economic impact as people move from subsistence farms to urban jobs. Per worker productivity in China and India is growing at more than five times the rate of most Western countries as agrarian economies become manufacturing and service economies. The next decade will mark the first time since the Industrial Revolution when emerging economies add more global growth than all the developed countries combined. Over the next ten years, gross domestic product (GDP) per capita will rise nearly five times faster in emerging economies than member nations of the Organisation for Economic Co-operation and Development (OECD).

In the next decade, emerging-market economies will shift from suppliers of low-cost goods and services to major providers of capital, talent, and innovation at scale. 2009 marked the first year when a company from an emerging market country, China, led the world in patent applications. Today, India is the largest supplier of technology workers of any country, and China will shortly pass the United States as the home of the world’s largest research and development (R&D) workforce. Already, more than 1,000 multinational companies operate R&D facilities in China, up fivefold from ten years ago.

The rapid increase in emerging markets means continued economic growth will require preparing students for new global realities. According to the Committee for Economic Development, “to compete successfully in the global marketplace, both U.S.-based multinational corporations as well as small businesses, increasingly need employees with knowledge of foreign languages and cultures to market products to customers around the globe and to work effectively with foreign employees and partners...
in other countries.” Therefore, “the educated American of the twenty-first century will need to be conversant with at least one language in addition to his or her native language, and knowledgeable about other countries, other cultures, and the international dimensions of issues critical to the lives of all Americans.”

Globalization has leveled the playing field for workers the world over and the rapid automatization of routine work has changed the landscape of labor for the 21st century and will continue to do so. Jobs that involve routine tasks or scripted responses are being done by computers or by workers in the developing world—with little training and at a very low cost. Jobs that require expert thinking and complex communication will remain in growing demand. At the beginning of the 20th century only five percent of jobs in America required specialized knowledge and skill. By the year 2009 at least 70 percent did. Eighty-five percent of the new jobs created in the past decade required complex knowledge and skills: analyzing information, problem solving, rendering judgment, and thinking creatively. In fact, the top 10 in-demand jobs in 2010 did not exist six years prior. Here too, international competition will prevail.

The New Commission on the Skills of the American Workforce articulates the challenge of global labor competition clearly: How can American workers maintain or improve their current standard of living if today Indian engineers make $7,500 a year against $45,000 for an American engineer with the same qualifications? Even if we were matched with Indian engineers in high levels of mastery of mathematics and science, the commission asks, why would the world’s employers pay us more than they have to pay Indian engineers to do their work? The commission postulates that the key to successful participation in the new global labor market is a “deep vein of creativity that is constantly renewing itself.” In their view, a high level of preparation in reading, writing, mathematics, science, literature, history, and the arts will be of the essence.

**National security**

Americans’ economic future depends on our global competence, and so too does our national defense. September 11, 2001 and events since have shown how crucial language capacity and cultural sensitivity is to national security. Federal agencies charged with national security sent out urgent calls to speakers of eight foreign languages to translate documents and websites, monitor internet communications, interpret spoken language in formal and informal settings, and represent American interest in public and private forums and in media around the world. These needs continue to this day. The Department of Defense, recognizing the need for high levels of cultural and linguistic knowledge for successful counter-insurgency efforts has introduced a requirement that all military officers must become proficient in a foreign language. Other national security responsibilities that require strong professional level language proficiency include intelligence analysis, law enforcement, and homeland security. And as scientific capacity develops around the world, to maintain our leading edge in science and innovation, we need scientists who can read the increasing scientific and technical literature that is written in languages other than English. In 2008, the National Research Council published the results of a congressionally mandated study, which concluded that, “The pervasive lack of knowledge of foreign cultures and languages threatens the security of the United States as well as its ability to compete in the global marketplace and produce an informed citizenry.”

**Global migration**

Globalization has also caused the human environment to grow more diverse and complex as the world has become more interconnected. Around the world, migration is reaching unprecedented proportions and speed, changing the demographics of classrooms and neighborhoods alike, from Boston to Beijing. According to data from the United Nations Population Division, by the summer of 2010
the total number of migrants in the world was estimated at 214 million. Fifty million were estimated to be living in the United States. If migrants were considered a country they would be fourth in the world in terms of population, after China (1.354 billion), India (1.214 billion), and the United States (317 million). In 2008 this migrant population was responsible for $338 billion in remittances back to their countries of origin—a growing percentage of these countries’ GDP. Much like global markets of labor and goods, migration today demands new educational responses.

What competencies do students need in a global economic and civic environment?

Multiple skill sets have been put forth as essential to prepare our future workforce. They range from learning, thinking, and innovation skills such as “thinking creatively” and “using systems thinking” to skills associated with life and careers, such as “designing, evaluating, and managing one’s own work for continuous improvement” or “adapting to change.”

These descriptions capture important knowledge and skills for today’s global economic and civic environment but fall short of fully and accurately identifying the learning outcomes that 21st century high school graduates will need to succeed. We want our students to think critically—about what? To solve problems—but what problems are most important to consider? To be innovative and entrepreneurial—in what scientific or economic environment? What students need are not generic thinking, work, digital, social, or information processing skills, rather knowledge and skills to investigate and participate in the world in which we live.

Higher standards and better outcomes in reading and mathematics are essential to our nation’s future. But these alone will not make us globally competitive if our students cannot also communicate with producers, buyers, and sellers in a world marketplace, or collaborate with people from cultures very different than their own to solve the world’s economic, social, and environmental problems. A priority on STEM (science, technology, engineering and math) education is crucial but with it must come a commitment to teach our students how to apply their knowledge within a global economic environment.

Globalization is irreversible and accelerating; it is the defining force of our times and the foreseeable future. The redesign of schools and school systems, therefore, must recast what it means to be well educated in global terms—to do otherwise is to prepare students for a bygone era. High wage jobs and a safe and sustainable future require students’ dynamic learning about, with, in, and for an increasingly complex, diverse, and interconnected world. Work and citizenship in a global era require global competence.

This year, a task force of the Council of Chief State School Officers defined global competence as the capacity and disposition to understand and act on issues of global significance. Global competence requires deep learning in the traditional academic disciplines of English, science, mathematics, social studies, the arts, and world languages. Subject area learning is both the foundation and the means for developing global competence. Four specific and interrelated capacities are embedded in global competence as here defined. They include the capacity to:

**Investigate the world:** Globally competent individuals are able to frame problems for inquiry that are of global significance—around the world or in their own backyards. Globally competent students can articulate the significance of their questions and know how to respond to these questions by identifying, collecting, and analyzing credible information from a variety of local, national, and international sources, including those in multiple languages. These students can use relevant evidence to construct a well supported argument or point of view.

**Recognize perspectives:** Individuals are able to articulate and explain the perspectives of
other people, groups, or schools of thought and identify influences on these perspectives, including how differential access to knowledge, technology, and resources can affect people’s views. They are also able to articulate and explain their own perspectives and influences on these. Their understanding of perspectives is deeply informed by historical knowledge about cultures, as well as contemporary events. They are aware that “negotiating” perspectives may or may not change people’s views, but nearly always deepen understanding.

Communicate ideas: Individuals can thoughtfully differentiate among audiences on the basis of culture, language, faith, and other factors. They can effectively communicate in a variety of cultural contexts and especially within collaborative teams. Because it is increasingly the world’s common language for commerce and communication, globally competent students in the United States and elsewhere are proficient in English as well as in at least one other world language. Globally competent students are media and artistically savvy; they know how to choose and effectively use appropriate technology and media to communicate with diverse audiences.

Take action: Individuals see themselves as players in today’s world. They recognize opportunities to carry out projects, organize others, and create products. They thoughtfully weigh options, act, and evaluate their work in ways that are informed, ethical, and courageous.

In sum, globally competent students can use the big ideas, tools, methods, and languages that are central to the disciplines they learn, such as those articulated in the Common Core standards, to engage the pressing issues of our time. They deploy and develop such expertise as they investigate topics like climate change, migration, new web 2.0 technologies, or sustainable energy use, recognizing multiple perspectives on these issues, communicating their views effectively in English and other languages, and taking action to improve conditions.

Redesigning Schools for Work and Citizenship in a Global Era

Thus far I have argued that the most pressing problem facing American education is to prepare every student for the challenges and opportunities of a world vastly changed by the relentless forces of globalization. In what follows I identify five key recommendations to promote global competence as a key priority in US education policy, with particular emphasis on the role of partnerships to realize this goal.

1) Provide incentives to state and local education authorities for international partnerships to benchmark their education systems against other countries. As Marc Tucker points out in Standing on the Shoulder of Giants, a century ago, when the United States built the current education system which led to the most rapid growth our economy has ever seen, we utilized the best ideas from abroad, mainly from the Germans and Scots. However, after World War II, when leading the world in education and industry, we stopped looking for new ideas outside our borders while other nations built superior pre-collegiate education systems based in part from relentless investigation of what works to educate students well wherever it could be found.

Fortunately, the tide appears to be shifting toward a renewed interest in learning from and with high performing and rapidly improving countries. For example, Asia Society launched a new initiative called “Learning with the World” in 2010 to provide a forum for educators in the United States, Asia, and elsewhere in the world to exchange ideas on how education systems can be improved to support academic achievement and global competence. The first “Learning with the World” meeting entitled “International Perspectives on US Policy and Practice: What Can We Learn from High Performing Countries?” was convened in April 2010 in collaboration with the Council of Chief School Officers. More recently, US Secretary
of Education Arne Duncan asked the OECD to produce a report on strategies that other countries have used to outpace us, and then called an unprecedented International Summit on the Teaching Profession in New York City which convened education ministers and union heads from high performing and rapidly improving OECD members.

What have these recent benchmarking efforts produced? Looking across the report of the Summit, and reports from Asia Society, the National Center for Education and the Economy, and others, international experience overall shows: 1) major improvements on a wide scale are possible in the time frame of a few years; 2) countries use a different mix of strategies because their contexts are different, but there are critical common elements; and 3) success requires creating systems—there are no silver bullets that singularly and miraculously drive high performance.

The Global Cities Network is a project currently in discussion among a number of US and international education systems to illustrate what an international partnership to redesign education systems might comprise. The GCN would involve a network of (initially) four to five urban school districts in the United States and an equal number of urban education jurisdictions in high performing Asian countries. The purpose of the GCN is to engage a core group of influential US and Asian stakeholders in these cities in collaborative work toward understanding common problems in education, designing flexible solutions, catalyzing change in policy and practice, and developing public demand for innovation. Teams from the Network cities comprised of district leaders, practitioners, and representatives of key external sectors (e.g., the business community) would engage in focused investigations on issues related to two seminal themes: 1) Innovation: how school systems can produce students who have the knowledge and thinking skills to succeed in a global economic and civic environment; and 2) Equity: how such systems can be designed to ensure all students develop these capacities. Reflecting an initial three-year commitment, Network teams would be convened at regular intervals alternating between US and Asian cities, and would work collaboratively between meetings using videoconferencing and other tools to outline a) changes in policy suggested by international benchmarking; b) pilot efforts that could be tried out in schools that reflect international best practices; and c) a process for informing and engaging the local community to build good will and momentum for implementing innovations.

2) Invest in the redesign and creation of new middle and high schools to address equity, excellence and global competence for all students. College preparatory, internationally themed schools have proven effective in closing achievement gaps and raising graduation rates, including in underserved, low-income communities plagued by “drop-out factories.” For example, the International Studies School Network (ISSN) is a national network of design-driven schools launched by Asia Society in 2003 that have achieved success in attaining their core mission: to develop college- and career-ready, globally competent high school graduates. The network currently includes over 30 elementary, middle, and high schools in urban and rural communities across the United States, including schools supporting states’ Race to the Top strategies for developing world-class education systems. Eighty percent of all students served by Network schools are minorities, and 63 percent are from low-income families. The most recent data comparing ISSN schools to demographically similar schools in the same school district show that ISSN schools outperformed comparison schools in 70 percent of such comparisons. Across the network, the average graduation rate was 92%; of that, the college going rate was 94%, of which over 70% selected four-year colleges or universities.

ISSN schools and other successful globally focused schools such as those profiled in a series of Asia Society reports share several key design elements that promote global competence at every turn:
• **Clear, high coherent standards that delineate expectations for student work that demonstrates global competence and college readiness.** For example, the ISSN Graduation Portfolio System is a performance-based instruction and assessment system that establishes a set of performance outcomes and related rubrics in each content area, aligned to Common Core standards, which describe characteristics of student work that demonstrates both college readiness and global competence. Related performance outcomes and rubrics at the 10th, 8th, and 5th grades provide a clear pathway of expectations for global competence and academic achievement from elementary through high school.

• **Integration of international knowledge and skills throughout the school’s curriculum, instruction, and assessment program.** In globally focused schools, students learn by addressing global issues and problems in the context of disciplinary and interdisciplinary study; by viewing course content within a global context; by examining the global history of knowledge; and by learning through global collaboration enhanced by cutting edge technologies.

• **Offer world languages as a core component of the curriculum.** Learning a second language contributes to a student’s broader academic and professional skill set, and is one of the most effective ways of allowing students to see things from multiple perspectives.

• **Provide ongoing professional development for teachers and leaders.** No matter how passionate they are about global learning, teachers cannot teach what they do not know. Teachers need professional development opportunities to upgrade their ability to integrate meaningful global content and develop students’ global competence.

• **Create family and community partnerships.** Schools set on developing students’ global competence recognize and “mine” parents’ diverse cultural and linguistic backgrounds. Businesses, universities, museums, and cultural organizations are all important resources in supporting the school’s global mission.

3) **Build national capacity in world languages from pre-school through college.** To build American education systems’ capacity in world languages from K–16, the federal government has a critical role in coordinating activities at the national level between different agencies and departments to ensure that evolving national security and economic needs for proficiency in the world’s critical languages are met. Federal incentives would enable states and localities to establish and fund language programs, starting in the elementary grades and continuing through high school; promote online language learning; and the recruitment and training of language teachers from our diverse language communities.

Partnerships between schools in the United States and abroad should form an important part of a strategy for developing language competence. For example, Asia Society’s Confucius Classroom project has established a network of 100 schools and school districts in the US that share best practices with regard to exemplary Chinese language instruction. Importantly, each of these schools is partnered with a school in China to engage in a broad range of collaborative and exchange activities for students, teachers and school leaders alike. The intent of these partnerships is to design and implement international connections that fit within the school’s strategic development and its routine activities, so that they become an integral part of the school’s transformation towards a more rich and global learning environment. Thus, the network establishes models and a knowledge pool for robust and sustainable school-to-school exchange programs that benefit the entire community, and act as a force in preparing globally competent graduates. The network’s US schools are located in nearly 30 states and Washington, DC, and their counter-
parts in China represent fifteen provinces and municipalities.

To support their work, the partnerships are provided detailed information on the purpose and the expectations for participating in the network, which include: a long term plan for international exchange that fits the school’s agenda, a multi-audience approach that covers students, teacher, leaders, and the community, a scaffolding action plan that moves the connection from basic towards comprehensive levels. Schools on both sides are brought together for two initial meetings (one in the US and one in China) accompanied with visits to each other’s school, during which the two sides learn about one another and begin to formulate specific next steps to move the partnership forward. Schools are free to design and implement their own partnership activities and Asia Society continues to provide guidance, technical support, and liaison at critical junctures. The ranges of activities schools are engaged in include: regular video conferences through Skype to enhance language learning and to discuss issues of mutual interest; Model UN conferences including high school peers from China; joint professional development institutes for teachers from all subject areas to exchange methodologies and curriculum materials. Other activities have involved local business and local governments, who benefit from the educational connections between the communities, and in turn also provide stronger support.

4) **Invest in our education leaders and teachers capacity to teach the global dimensions of their subjects.** Partnerships should be stimulated across all levels of government, the community, and the private sector to provide opportunities for teachers, principals, and teacher educators to acquire the knowledge and skills needed for the 21st century including: updating their knowledge of world regions, economics, and global challenges; understanding how to work as part of international teams to address these challenges; and the ability to communicate across cultures. Asia Society’s Partnership for Global Learning (PGL), a national professional development network, provides precisely these kinds of learning experiences. However as a nation the need for such training far exceeds what the PGL can provide to a few hundred teachers.

Well prepared teachers are essential, but so too are highly effective school leaders. The school leader is fundamental to promoting global competence as a key priority and making it an essential aspect of school culture. He or she is responsible for establishing the knowledge and skills foundational to global competence as key learning objectives, and supporting teachers in their efforts to integrate these objectives as they work to ensure that all students meet state and local standards.

5) **Expand federal programs that support the engagement of U.S. students and teachers with the rest of the world.** Whereas 0.5 percent of US college students studied abroad in 2000, the comparable figures were 3 percent for France and China, 16 percent for Ireland, and 30 percent for Singapore. Only 50 percent of US high school students take even one year of a foreign language. In many other countries, education leaders study education practices internationally, teachers are encouraged to study abroad, schools are encouraged to form sister-school partnerships with schools in other countries, and all students learn a second language. We need to do far more to encourage our students and teachers to experience other cultures both at home and abroad.

In conclusion, the challenge is clear: the world for which we are preparing students today is fundamentally different from the one today’s educators and today’s policy makers experienced growing up. The nature and pace of global economic activity, that virtually every national security issue has a global dimension, and the fact that migration and immigration are reshaping neighborhoods and national identities the world over require the redesign of education systems to foster new knowledge, skills, and dispositions that include but go beyond “21st century thinking skills” toward a broader set of learning outcomes cast in global
terms. Put simply, jobs and citizenship in a global era require global competence.

Maintaining our competitiveness and security requires substantial and strategic investments in human capital and proven practices and a federal, state, and local partnership that focuses national attention on redesigning our schools for the 21st century. Partnerships, too, should play a key role in the redesign process itself, from international partnerships to foster benchmarking of best practices worldwide to partnerships with parents and community organizations that can support a school’s global perspective.

The bottom line is that high performing nations such as those at the top of the most recent OECD Programme for International Student Assessment (PISA), an international comparison of student performance where the United States ranks 14th in reading, 17th in science, 25th in mathematics, are systematically implementing policies and practices that advance all of their students’ ability to perform in the global economy, evincing a relentless pursuit of excellence and equity in a global era. The challenge to the United States, and the cost, of “putting the world into a world-class education” will be considerable. The cost of not doing so will be infinitely greater.

Endnotes


12 http://asiasociety.org/node/11990

13 http://asiasociety.org/education/partnership-global-learning/publications

14 http://www.ncee.org/publications

15 Going Global: Preparing Our Students for an Interconnected World; Expanding Horizons: Building Global Literacy in Afterschool Programs; and Ready for the World: Preparing Elementary Students for the Global Age. All publications can be found at: http://www.ncee.org/publications
Educating America’s Youth for Success in the Global Arena

CONference Participants

August 15-20, 2011

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and Martha Carper
Representative Jim Cooper
and Martha Cooper
Representative John Garamendi
and Patricia Garamendi
Senator Richard Lugar
and Charlene Lugar
Representative Jim McDermott
Representative George Miller
Representative Ed Pastor
and Verma Pastor
Representative Donald Payne
and William Payne
Representative David Price
and Lisa Price
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Representative Jackie Speier
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Carrie Rowell
Improving K-12 Student Achievement: Lessons From Ontario
Avis Glaze, former CEO, Secretariat for Literacy and Numeracy
Ontario Ministry of Education

• Are there policies and strategies that Canada is using (both in common with many other high-achieving countries and unique to Canada) that are applicable to the U.S.?
• Are there innovations on the horizon that are especially promising?
• What policies were in place to educate Ontario’s immigrant populations?

A Collision Course With the Future: Projections of Jobs and Education Requirements
Anthony Carnevale, Research Professor and Director
Center on Education and the Workforce, Georgetown University

• Given global competitiveness and the U.S. economic recession, what is the current link between education and earning potential? Are K-12 schools adequately preparing students for both higher education and the workplace? What are the challenges for social mobility in our diverse country from the perspective of a labor and education economist?
• Given the U.S.’s shifting labor market demands, how should our higher education system evolve?
• Will the U.S. have the necessary workforce supply in STEM (Science, Technology, Engineering and Math) fields to maintain the kind of innovation that has characterized U.S. economic growth?

Political Strategies for Educational Success: The Ontario Story
Gerard Kennedy, former Minister of Education, Ontario, Canada

• How were political forces brought together on education policy?
• What were the key factors in bringing about Ontario’s successful initiatives?
Transitioning Schools and Community Colleges From Outdated Models to Better Serve the Needs of Modern Learners

Anthony Bryk, President, Carnegie Foundation for the Advancement of Teaching
Gail Mellow, President, LaGuardia Community College

- What is “outdated” in current teaching models and how essential is modernization?
- Are there new tools and technologies to strengthen the transition from high school to the demands of community college?
- How can time and resources spent on remedial classes in community colleges be redesigned to increase effectiveness?
- Are there ways to improve the impact of federal supports, especially Pell grants?

Using People, Time and Resources Most Effectively to Provide Students What They Need to Achieve

Karen Hawley Miles, President and Executive Director, Education Resource Strategies
Jerry Weast, former Superintendent, Montgomery County, Maryland Public Schools

- What can be learned from school systems that use resources most wisely?
- What tools can schools use to most effectively stretch their resources?
- How can schools better leverage federal dollars? Where do Title I and Title II monies fit in this picture?
- Are there “smart cuts” that school systems can make to stretch constrained budgets?
- How can school systems prioritize high impact spending for college and career readiness?

Redesigning Schools and Teaching Practices Through Innovative Partnerships and Technology

Margaret Honey, President and CEO, New York Hall of Science
Anthony Jackson, Vice President for Education, Asia Society

- Can evolving technologies be leveraged to improve instruction, teacher preparation, professional development, collaboration and support?
- What is the potential for non-traditional teaching for improving student learning?
- What are models of innovative partnerships for strengthening teaching through partnerships, especially in STEM education?
- What can school systems, states or the federal government do to enable productive partnerships?