

**Spring 2012
Industry Study**

**Final Report
*Education Industry***



The Industrial College of the Armed Forces
National Defense University
Fort McNair, Washington, D.C. 20319-5062

EDUCATION 2012

ABSTRACT: Our national security is defined by and derived from our military strength, economic strength and power to project influence globally. Education feeds all disciplines, promotes and cultivates creative and critical thinking, supplies an educated and skilled workforce, and molds an informed citizenry. An educated population is essential to a productive and healthy economy, a strong military and a business and academic prowess that keeps the United States a major competitive force in the world. An inadequate education system will ultimately detract from the economy, the military, and our overall security as a nation. By making education accessible, affordable and equitable, we build a solid foundation for our national security.

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 American Council of Higher Education, Washington, DC
 American Public University, Washington, DC
 Bill & Melinda Gates Foundation, Washington, DC
 Boston Latin School, Boston, MA
 Boston Public Schools, Boston, MA
 Century Foundation, Washington, DC
 Chelsea Public Schools, Chelsea, MA
 Council of Great City Schools, Washington, DC
 DC State Board of Education, Washington, DC
 Department of Defense Education Activity (DODEA), Washington, DC
 District of Columbia Public Schools Elementary School, Washington, DC
 Early Education Initiative, New America Foundation, Washington, DC
 Educational Testing Service, Washington, DC
 The Education Trust, Washington, DC
 Embassy of Canada, Washington, DC
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 Home School Legal Defense Association, Washington, DC
 Knowledge is Power Program: KEY Academy, Washington, DC
 Maryland State Department of Education, Baltimore, MD
 Massachusetts Department of Elementary and Secondary Education, Malden, MA
 Mid-Atlantic Troops to Teachers, Trenton, NJ
 Minuteman Regional High School, Lexington, MA
 Montgomery County Public Schools, Rockville, MD
 Montgomery College/Montgomery County Public Schools Partnership, Rockville, MD
 Mountain Ridge High School, Cumberland, MD
 Mountain View Alternative High School, Centreville, VA
 National Governors Association, Washington, DC
 National PTA, Washington, DC
 Northern Virginia Community College, Annandale, VA
 Potomac Job Corps Center, Washington, DC
 Raytheon Corporation, Waltham, MA
 Sylvan Learning Center Headquarters, Baltimore, MD
 Tech Boston Academy, Boston, MA
 Thomas Jefferson High School for Science and Technology, Alexandria, VA
 Triangle Coalition for Science and Technology Education (Teachers Panel), Washington, DC
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Department for Education, London, United Kingdom
École des Mines de Paris (MINES ParisTech), Paris, France
Enfield County Girls' School, Enfield, England
Finnish National Board of Education, Helsinki, Finland
King's College London, London, England
Lycée Darius Milhaud, Le Kremlin-Bicêtre, France
Office for Standards in Education, Children's Services and Skills (Ofsted), London, United Kingdom
Superintendent, French Ministry of Education, Paris, France
Vantaa Vocational College Varia, Vantaa, Finland

*A world-class education is the single most important factor in determining not just whether our kids can compete for the best jobs but whether America can out-compete countries around the world.*¹

-President Barack Obama, July 18, 2011

Introduction

Education and U.S. national security are inextricably linked. The ability of the United States to project power and defend its vital interests, both militarily and diplomatically, is only as strong as the national economy that backs it. The lifeblood of the U.S. economy is an educated population, and currently the U.S. education system is falling down on the job. As the seminal 1983 report *A Nation at Risk* put it, “if an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war.”² A generation has passed since those words were written, but they are no less true today. Education is unquestionably a launching pad to individual prosperity and social stability and is a critical foundation for national security and long-term domestic economic growth and global economic competitiveness. As stated in the 2010 *National Security Strategy* (NSS), “we must build a stronger foundation for economic growth,”³ and “that foundation must include access to a complete and competitive education for every American.”⁴ A recently released report by the Council on Foreign Relations perhaps summarized the issue best stating, “National security today is closely linked with human capital, and the human capital of a nation is as strong or as weak as its public schools.”⁵

The dismal report card represented in Table 1 fuels the growing fear that this generation of Americans will be the first in history to be worse off academically and economically than the previous generation. As Table 1 indicates, dropout rates, reading and math proficiency rates, and the international competitiveness of U.S. students are significant concerns. Graduating significantly fewer high school students than top-achieving nations, coupled with awarding many students empty diplomas, is a slow burning recipe for personal and national failure.

In an increasingly globalized, knowledge-based economy, the U.S. Department of Labor reports that 62 percent of all U.S. jobs currently require at least a two-year degree and predicts that by 2020 this figure will rise to 75 percent.⁶ These growing trends of academic ineptitude signal an untenable economic and national security challenge requiring immediate, transformational corrective action to mitigate the impacts of a long-standing inequitable and inefficient education system.

Governments at all levels (i.e., federal, state and local) are continuing to fail in meeting the needs of the global system. In many respects, our nation is not producing educated citizens able to meet our 21st century national security needs. As a step in the right direction, President Obama’s administration has stated that it is “committed to providing every child access to a complete and competitive education, from cradle through career.”⁷ This vision is useful to guide where we, as a nation, put our investments and further ensure that we receive a return on our investment. As education spending increases one would expect test scores to also increase. Unfortunately, this has not been the case in the U.S. education system for decades; according to the renowned work *Waiting for Superman*:

Since 1971, education spending in the United States has more than doubled from \$4,300 per student to more than \$9,000 per student

(adjusted for inflation). Yet in that same time period, reading and math scores have remained flat in the United States, even as they have risen in virtually every other developed country.⁸

Table 1.
College and Career Readiness of U.S. Students

% of Students College ready (ACT)	25% ⁹
% high school graduates go to college (2009)	70% ¹⁰
% of college dropouts after 1st year	30% ¹¹
% of college freshman requiring remediation	36-42% ¹²
% graduate 4 yr college in 4 years	40% ¹³
% students graduate high school	69%* ¹⁴
% students dropout high school	31% ¹⁵
% students repeating grades annually	15-20% ¹⁶
% 4th grade proficiency-reading (2011)	34% ¹⁷
% 4th grade proficiency-math (2011)	40%
% 8th grade proficiency-reading (2011)	34%
% 8th grade proficiency-math (2011)	35%
% 12th grade proficiency-reading (2009)	38% ¹⁸
% 12th grade proficiency-math (2009)	26%
U.S. PISA rank - reading (2009)	14th of 34 ¹⁹
U.S. PISA rank - science (2009)	17th of 34
U.S. PISA rank - math (2009)	25th of 34
*Calculated differently across states	

Source: Multiple Sources. See appropriate notes.

While much of the additional spending noted above has gone to increase access and programs for a broader population such as children with special needs and English language learners, many of the shortcomings of the U.S. education system are attributed to how the resources are applied, the distribution of those resources, and the value we place on education as a whole. U.S. students lag significantly behind the students of many other developed countries in the ability to reason and apply learned skills, the insight based on “learning for transfer,” and complex problem solving. For the most part, these skills are learned and honed with a solid science, technology, engineering and mathematics (STEM) curriculum.²⁰ Our thesis is that an educated population is essential to a strong economy and therefore national security. Education supports innovation that keeps the U.S. a global military, diplomatic and economic leader. Without a strong economy, backed by educated and working Americans, our national security is at risk.

To support the argument that our national security is at risk, this paper first identifies the education industry as a whole, characterizing it as decentralized and diverse. It captures the

current conditions of the education system, highlighting nine supporting markets and their activities, products, and services. When evaluating these nine markets, we identify five of the most significant challenges and opportunities to include: Teacher Effectiveness; STEM and Common Core State standards (CCSS); Early Childhood Education; K-12 Funding; and the Availability and Affordability of Higher Education. Given the current conditions as well as the challenges and opportunities accented, we offer what we believe is the future outlook for education and propose six policy recommendations for improving the U.S. education system and our national security as a whole. These policy recommendations are intended to achieve the national goal of college and career readiness for all Americans.

Industry Defined: Decentralized and Diverse

Education is unlike many of the traditional industries in the United States such as ship building or manufacturing. There are several reasons for this, but the primary one is that the public sector provides the bulk of all services that make up the U.S. education system. In much the same way that it is an elusive goal to define our nation’s domestic “safety” or “security” industries, which can consist of many private suppliers of services and goods. K-12 is predominately provided via public services, thus is difficult to fit traditional economic market definitions to education.

One consideration is that primary- and secondary-level education is understood to be a basic human right and, as such, is provided as a “free” public service in all states and territories of the United States. Although individuals contribute funding towards K-12 public education in the form of income, property, and sales tax payments, people are not able to link individual payments made to the quality or quantity of the service provided. Also, while the specific age requirements differ by state, school attendance via a public, private, or home schooling program is compulsory for all children between eight and 16 years of age in all 50 states. So, unlike any other industry (except perhaps healthcare should the Affordable Care Act remain intact), the population of “customers” for education is assured and relatively stable. Figure 1 depicts the education industry that most Americans, as a result of their personal experience, are familiar with. This supply chain view reflects the steps through which typical Americans advance to complete their primary and secondary education in preparation for careers or college education.

In addition to the suppliers, producers, and customers outlined above, there are numerous markets that exist under the umbrella of education such as textbook publishers, testing services, tutorial services, and educational support services. The education “industry” that we have examined is an extremely complex conglomeration of markets both public and private that is largely not driven by traditional competitive market forces for the largest market served (i.e., K-12 education). All of these factors create a very unique set of circumstances for defining the U.S. education system as an industry.

Fundamentally, the education industry can be thought of as consisting of a system of markets that is highly fragmented, both by the population served (e.g., grade levels) and geographically (because each state is responsible for the laws that govern education and the availability of education institutions within the state and locality). As reflected in the numerous North American Industry Classification System codes for education, there are many sub-markets that provide supplies, equipment, services in support of education, which can be examined in a more traditional economic analysis approach. Also, pre-K and post-secondary education tends to look and act more like a traditional market than K-12 education.

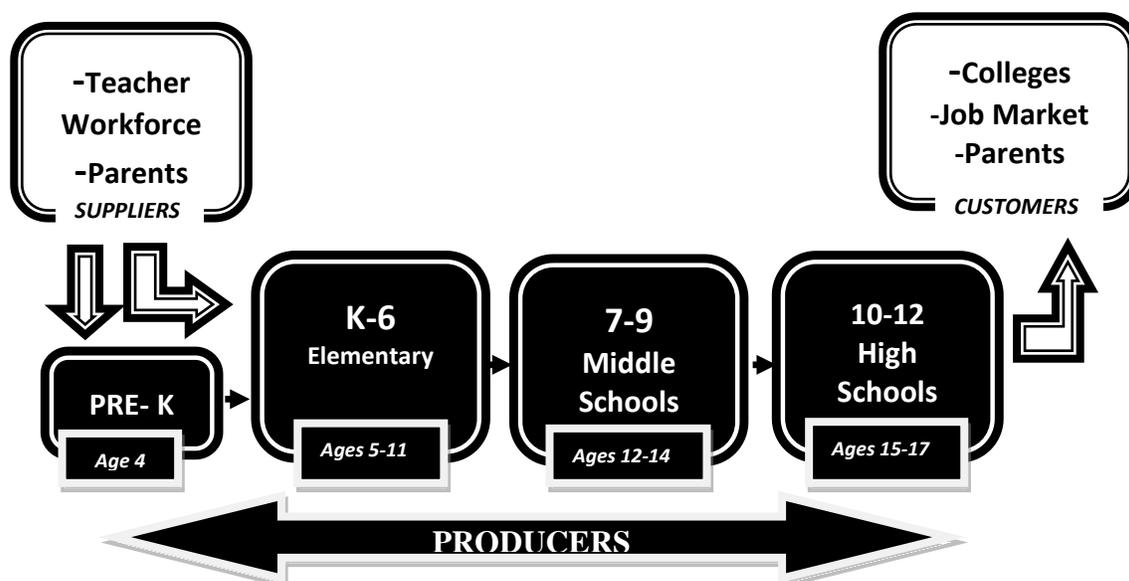


Figure 1. Pre-K through 12 Educational Supply Chain.

Source: Pamela Theorgood, "The SCOR in American PreK-12 Education: A Supply Chain Management Perspective" (Master's research, Industrial College of the Armed Forces, 2012), 4.

Current Conditions

Although the U.S. education system is diverse, we can establish a simple framework to conduct economic analysis. IBISWorld (www.ibisworld.com) has prepared nine reports that cover the economic aspects of the U.S. education industry. We will look at the nine education markets in terms of revenue, growth, and employment. We will also identify the key suppliers and consumers in each market. The education industry's economic contributions are significant: over \$1 trillion of the U.S. gross domestic product (GDP) and 12 million U.S. jobs according to the IBISWorld reports. As summarized in Table 2, except for the textbook and college & university markets, the industry is growing and employing more people each year. We discuss each market in detail, starting with the largest contributor to GDP and ending with the smallest.

Table 2.

Revenue and Employment in the U.S. Education Industry.

U.S. Education Industry Markets	\$ Billion Revenue	Millions of Employees	Year-to-Year Employment Trend 2010-11
Public Schools	616	6.3	↑
Colleges & Universities	354.2	2.6	↓
Private Schools	76.6	0.8	↑
Early Childhood Ed	46.8	1.6	↑
For Profit Universities	25.7	0.19	↑
Trade & Technical	16.6	0.15	↑
Testing & Ed Support	15.5	0.14	↑
Textbooks	13.3	na	na
Tutoring	9	0.22	↑
Total	1173.7	12	

Source: Adapted and compiled from multiple IBISWorld sources, www.IBISWorld.com.

Public Schools. The public school market provides free education for a community's children from kindergarten through the 12th grade. Government funds support these institutions. Public school students complete standardized testing to prove that the school systems meet regulatory requirements to receive those funds. Public schools teach basic literacy and establish foundations in math, history, science, etc. This market provides the foundation for the nation's workforce, including the military. Public education is a \$616 billion market.²¹ Because public schools rely on state, local and federal funds, revenue can change every year. A decline in property values impacts revenues. Local municipalities tax the value of property to fund public schools. Households and children are the key consumers.²² The key suppliers to the public schools market are: building construction (alteration, repair and maintenance of public school facilities); office stationery (notebooks and products for students, teachers, and staff); books; lab supplies; janitorial services; computers and software; and bus services.²³ Employment in this market grew from 6,154,000 in 2007 to 6,319,000 in 2011.²⁴ Public schools are the gateway to higher education for the majority of Americans.

Colleges and Universities. This market includes colleges and universities that provide degrees at the undergraduate and graduate levels but does not include for-profit institutions, which are defined separately. The market includes colleges and universities (except junior colleges), theological seminaries, professional schools, and military academies. This market has experienced rising tuition and increased demand for higher education. Revenue in this market is \$354.2 billion.²⁵ Between 2006 and 2011 there has been a 1.7% decline in annual revenue.²⁶ This decline is due to a drop in investment income and cuts in state budgets for higher education. Since revenues depend in part on state funding, revenue volatility is medium.²⁷ Key buyers in this market are finance and insurance, professional and technical services, and scientific research & development. The key suppliers to this market are similar to those of public schools.²⁸ Employment in this market has fallen from 2,778,000 in 2007 to 2,679,000 in 2011 due to state budget cuts.²⁹ The demand for higher education will continue to fuel growth in this market.

Private Schools. Private schools provide similar services as public schools but do not receive government funding. They include nonsectarian and religious schools. Private schooling is a \$76.6 billion market.³⁰ Unlike public schools, private school revenue volatility is low.³¹ There is a predictable demand, and private schools have the freedom to raise tuition if necessary. The supply chain is similar to the public school supply chain. Employment in private schooling grew from 778,610 in 2007 to 844,172 in 2011.³² Competition in this market may constrain growth in the future.

Early Childhood Education. This market is a key foundation for the overall economy. This market provides care and education traditionally confined to the home. It allows parents to stay active in the workforce. The services in this market generally provide care for preschool children and school age children when they are not in school (i.e., during the summer and before and after school hours). The activities associated with this market include group day care, Head Start programs, pre-K facilities and pre-school facilities.³³ This market has \$46.8 billion in revenue and experienced annual growth between 2007 and 2012 of \$2.8 billion.³⁴ Because most households see day care as a necessity, the market's revenue volatility is low. Annual growth for the next five years is expected to be 2.8%.³⁵ There are approximately 830,000 businesses in this market. With respect to the supply chain, households are the primary users of day care. Institutions that assist disadvantaged families also use day care services to assist parents.³⁶ The key providers to day cares are game manufacturing, computer stores, and book publishers.³⁷



Employment in this market grew from 1,544,937 in 2007 to 1,654,890 in 2011.³⁸ As the economy recovers and employment rises, demand in this market will grow.

For-Profit Universities. This market confers degrees on a for-profit basis. The emphasis on profit and different consumers sets this market apart from the Colleges & Universities market. It includes professional school courses provided for-profit. This market is coming under increased federal scrutiny, but new markets and on-line classes will support growth.³⁹ For-profits provide higher education to those who cannot attend a traditional four-year institution. The revenue in this market is \$25.7 billion, with an annual growth rate between 2006 and 2011 of 13.5%.⁴⁰ Revenue volatility is low due to increased demand and rising high school graduation rates. This has made gaining admission to a traditional four-year college or university more difficult. Key buyers from this market include professional services, the healthcare industry, and consumers. The suppliers to this market are similar to those of public schools.⁴¹ Employment has grown from 140,536 in 2007 to 197,820 in 2011.⁴² Congress may apply greater scrutiny to this market, but the demand for higher education that provides flexibility to the consumer will continue to grow.

Trade and Technical Schools. This market provides job-specific training and includes apprenticeship programs and medical technician, firefighter, and real estate licensing schools. During the most recent recession trade and technical schools have seen strong growth. This is a \$16.6 billion market that has seen 4.8% annual growth since 2006.⁴³ Revenue volatility is low due to steady expansion and rising tuition fees. This market benefits from Federal Title IV funding and satisfies a growing downstream demand for qualified labor.⁴⁴ The buyers in this market are higher education, because some students continue their education after trade school. The suppliers in this market are similar to the public school suppliers.⁴⁵ Employment in this industry has grown from 147,490 in 2007 to 156,647 in 2011.⁴⁶ This market is critical for career switchers.

Testing and Education Support. This market provides non-instructional support to the education industry. The support includes testing service and education subject matter expert consulting but does not include educational software development firms. The activities in this market include college selection services, educational consultants, guidance counseling consultants, testing services, support services, school bus attendant services, and student exchange programs. The educational testing services serve as a gateway to higher education. They have a significant influence on the quality of students entering higher education. This is \$15.5 billion market with an annual growth rate of 5.3%.⁴⁷ Educational testing accounts for 60% of the revenue in this market. Relatively stable enrollment in primary, secondary, and higher education keeps revenue volatility low.⁴⁸ The No Child Left Behind Act of 2001 (NCLB) has generated increased demand for testing and assessment services.⁴⁹ These services are increasingly using on-line testing, which is reducing labor costs compared to paper tests and increasing profits. The buyers in this market are nearly all schools, community colleges, and universities.⁵⁰ The suppliers to this market are book, software, and office space leasing. Employment rose from 130,522 in 2007 to 148,205 in 2011.⁵¹ Competition continues to grow in this market.

Textbooks. Textbooks and scholarly, professional, and technical books account for 49.4% of all book revenue, or \$13.3 billion.⁵² The diversity of products helps maintain low revenue volatility.⁵³ Students must have textbooks throughout their education. The buyers in this market are schools, educational services, and consumers.⁵⁴ The suppliers are paper mills, printers, ink manufacturers, and paper wholesalers. Employment numbers for the textbook

market are not available; however, we can expect that employment in that market mirrors that of the publishing industry. That industry saw an 11% decline in employment in the last five years as companies adopt less labor intensive techniques.⁵⁵ The availability of electronic media will continue to put pressure on this market, cutting into profits.

Tutoring Services. This market includes tutoring, exam preparation, and driving schools for primary and secondary education students (and in some cases adults). They include learning centers and religious schools. Tutoring services provide supplemental education for those unable to achieve in primary schools. This supplemental education can be the difference in achieving standards for high school graduation or college entrance. This market has \$9 billion in revenue and has seen a 1.3% growth in the last six years.⁵⁶ An increased demand for tutoring has helped to keep revenue volatility in this market low.⁵⁷ The key buyers in this market include the public schools, because NCLB requires many schools to offer students free tutoring.⁵⁸ Individual consumers are the majority of buyers. Suppliers to this market include computer hardware and software vendors and commercial leasing for retail space in which to teach classes.⁵⁹ Employment for tutoring and driving schools rose from 211,297 in 2007 to 229,365 in 2011.⁶⁰ The future of federal funding for tutorial services will impact the future growth in this market.

Given these nine education segments, the education industry is economically strong. It is an attractive industry for private investment given the appropriate public policy initiatives. Before we investigate those initiatives, we should study the broader challenges and opportunities.

Challenges and Opportunities

There are several challenges and opportunities to improve U.S. education from early childhood to adulthood in an effort to keep our nation globally competitive. This section specifically addresses teacher effectiveness, STEM, early childhood education (ECE), K-12 funding, and the cost of higher education.

Teacher Effectiveness. An area receiving particular scrutiny within the education reform effort is teacher effectiveness. And for good reason, as research increasingly demonstrates that teacher effectiveness has a “larger impact on student learning than any other factor controlled by school systems, including class size, school size, and after-school programs -- or even what school a student is attending.”⁶¹ Without a clear link between student achievement and the teacher’s performance evaluation, K-12 public education will continue to be sub-optimal, and questions of return on investment will persist. Yet, as of 2011, only 15 states require annual teacher evaluations and, of those, only 13 actually take student achievement into consideration.⁶² Most evaluation systems are pass/fail and do not link teachers’ ratings to provide educational outcomes, and they do not provide teachers the feedback they need to become more effective. Additionally, the United States must raise the standards for becoming a teacher. As it stands today, “most of the nation’s future teachers come from the bottom third” of college bound high school graduates.⁶³ When compared internationally, the U.S. teacher education programs are significantly lagging. Studies have shown the top performing international education systems are highly selective with their admission requirements for teacher candidates. Programs from South Korea, Finland, and Singapore produced teachers from the top 5 percent, top 10 percent, and the top 30 percent, respectively,⁶⁴ while the United States pulls from the *bottom 30 percent* of high school graduates. As a minimum, individuals identified for selection and entry into teacher training programs should come from the top half of college-bound students. Additionally, once the prospective teachers make it into a program, the education and



preparation imparted should be at a level to instill quality content knowledge. The major challenge effectively becomes: how can the federal government enact reform to the college teaching programs across the 50 states with their large number of universities and colleges? The related opportunity is for states to work more closely with their colleges and universities to increase the entry standards for education programs and to target higher quality students for prospective teachers. Investments in teacher creation should remain a high priority in the current fiscally-constrained environment.

STEM. Of foremost concern to the national security community is the shortage of graduates in the STEM fields of study. The only way to continue to lead the international community in an ever-changing and competitive global environment is to cultivate aggressively the next generation of creative minds and grow leading human capital with STEM skills. Skilled jobs are available, but the supply of STEM-educated workers does not meet the demand. Furthermore, the present economy places extreme pressure on local, state and federal budgets as a multitude of requirements compete for limited funds, further compounding this, as well as myriad other education issues. The STEM issue is the current standard-bearer for mounting concerns over student quality. To reverse the negative trends, policy makers and educators must focus on engaging students in math and science from an enlightenment standpoint. Students must be reached through innovative and inspiring teaching methods to develop lifelong relationships and improve proficiency and interest in STEM subjects.⁶⁵ Additionally, more doors must be opened to expand and promote racial and gender equality.⁶⁶ The United States must make better use of all of its talented human capital, not just a select few.

Common Core State Standards. For some, standards-based reform is the solution to such challenges as STEM. Others, however, attribute new challenges to the movement itself. One recent effort to increase student achievement in public schools, Common Core State Standards (CCSS), is an ostensibly state-led initiative shepherded by the National Governors Association and the Council of Chief State School Officers to create a common core of English language arts (ELA) and mathematics standards for public school grades K-12.⁶⁷ The intent of CCSS is to replace the current “patchwork”⁶⁸ of academic standards with a uniform, rigorous core that better prepares students for college and careers in a globalized economy, is less expensive, and can be benchmarked internationally as well as against other states. Response to CCSS from political and education leaders, as well as the public, has been generally favorable. However, five states have not adopted CCSS; and, questions about its likely impact and efficacy abound. These concerns include general opposition to increased centralization of standards and curriculum; disagreement over the increasing trend toward outcome- and standards-based reform; recent studies that suggest that standards and commonality have negligible impact on student achievement; implementation and transition challenges related to cost and initial student performance; and anticipation of unforeseen effects and unintended consequences similar to NCLB.

Early Childhood Education. The years from birth to age five are critical to the formation of skills, mechanisms, and attitudes toward education and learning. According to child development research and neuroscience, “the experiences a child has between birth and age five shape the developing brain’s architecture and directly influence later life outcomes, including economic stability, work productivity, and mental health. Positive early childhood experiences also improve developmental and school readiness outcomes, increase K-12 achievement, and contribute to higher rates of high school graduation.”⁶⁹ ECE is a key ingredient that is now being given more emphasis in the United States, but it will require a cultural shift. The needs include



improvements in the quality of child care including access and availability, changes to universal enrollment, and funding reform.

Compulsory public schooling should first be expanded to age four, and then transition eventually to include three-year-olds. This would require economic tradeoffs and a culture shift, which can be influenced by setting goals and articulating a consistent, long-term pursuit of reforms supplemented and bolstered by research and evidence. An opportunity exists for the states' emerging Early Childhood Advisory Councils (ECACs) to establish ECE-specific standards for both student learning and teachers/caregiver training and evaluation. In order to be able to implement the needed reforms in lean times, efforts among all ECE, welfare and other related state and local programs and services should be streamlined to pool funding and costs. If high-quality programs are made available, ECE is a key ingredient that the United States should blend into the education system.

K-12 Funding. At the same time that many argue we need to be taking bold steps to improve our K-12 education system, our country is facing a mountain of debt (now approximately equal to the size of our gross domestic product) and projected significant budget shortfalls for the next several years. Congress is under extreme pressure to reduce government spending and bring our deficit and growing debt problem under control. Additionally, state and local revenues are down due to a slow economy and deflated housing values, and state budgets are being increasingly squeezed by growing Medicaid costs (having increased by \$19 billion over the past fiscal year). With states spending an average of 25% of general funds on K-12 education per year, the economic crisis caused 18 states to reduce funding in 2011 for K-12 education.⁷⁰ These facts provide a gloomy backdrop for the nation's challenge to fund meaningful educational reform encompassing the more than 98,000 public schools, most of which will require a sizeable upfront investment of capital during a time when so many are calling for measures of austerity.

More optimistically, opportunities for improving K-12 education funding exist within the current system. The federal government, states, districts and schools can and should make use of the current fiscal crisis to reduce overhead, management, administrative, and operating costs while investing more in student instruction. For example, states should explore opportunities to achieve greater buying power for school districts by reducing costs associated with contract administration. To the extent that school districts do not currently align with county borders, states should seek to reduce the number of school districts and combine those areas that make sense to reduce the amount of administration and overhead. Great efforts have been made at the state level over the past 35 years to better equalize educational funding. For example, many states have passed legislation, sometimes referred to as "Robin Hood laws," to equalize per-pupil spending rates. However, one discrepancy that still remains relates to the way funds are provided for teacher salaries. Adjustments need to be made that would allow lower performing and poorly staffed schools to attract and retain more highly qualified teachers. Furthermore, funding should be provided to the maximum extent without unnecessary strings or conditions that require additional oversight or management at the district level. At the same time, it is important to maintain complete transparency in the resourcing and spending of public education funds in order to keep all stakeholders fully informed and to promote accountability. Ultimately, near term funding challenges will necessitate that lawmakers and administrators jettison business-as-usual approaches in order to ensure funds are not diverted before reaching the point of greatest impact--inside the classroom.

Availability and Affordability of Higher Education. The basic building block for having a powerful and diversified economy is a strong educational system that produces critical thinkers and innovators. Unfortunately, the skyrocketing cost of higher education has put the traditional path of graduating from high school and immediately pursuing studies at a four-year school out of reach for many students. If “afford” is defined by Merriam-Webster as “to manage to bear without serious detriment,” one could argue that a college education is not affordable if it requires assumption of a significant amount of personal debt to cover the near-term expense. Over the past ten years, tuition and fees at public four-year colleges have climbed fifty percent,⁷¹ student loan debt climbed to \$867 billion in 2010,⁷² and the amount of federal aid available to individual students has not changed since 1992.⁷³ The recent annual growth is significantly outpacing inflation, with the cost for tuition and fees from 2010 to 2011 growing six percent and the total amount spent in the United States for post-secondary education in 2009 exceeding the combined gross domestic product of Sweden, Norway, and Portugal.⁷⁴

The debt burden is a highly-charged and emotional issue. The current economic crisis and the rising cost of a college education have combined to produce staggering growth in student debt. The cost and debt being incurred by our youth are unprecedented and may lead to another financial crisis or economic uncertainty as our younger generations are saddled with massive personal and national debt while we expect them to financially support previous generations and to develop solutions to mitigate our current national and global economic crisis. However, there is a cost-effective way to increase the number of college-educated professionals. While community colleges offer one path to lifelong learning, other avenues also exist to keep higher education from guaranteeing lifelong debt. Additional opportunities for reform driven by legislation and/or innovation will be addressed in the recommendations section of this paper.

The challenges posed by lean times and shrinking government budgets mean increased scrutiny of education initiatives from early childhood through adult education. The current economic reality not only exacerbates challenges related to funding, availability and affordability; it also makes it imperative that policy makers shift resources to those education areas that exhibit the most need and promise for return on investment: STEM skills, teacher effectiveness, and early childhood education.

Outlook

While there are several educational success stories as well as promising reform efforts, the academic performance of U.S. students continues to disappoint. Our globalized, knowledge-based economy requires that the U.S. education system produce students who are adequately prepared for citizenship; able to effectively participate in an increasingly fast-paced and interdependent global society; and can enter college, the workforce, or military service.⁷⁵ According to the results of the 2009 Program for International Student Assessment (PISA), an international assessment that measures the performance of 15-year-olds in reading, mathematics, and science every three years, “U.S. students rank 14th in reading, 25th in math, and 17th in science compared to students in other industrialized countries.”⁷⁶ While it is difficult to determine exactly what the causal factors are that contribute to our students’ dismal performance, there are certainly reform trends that offer hope.

While our national education outlook may appear grim overall, there are positive reform trends to include increased commonality among the states; greater accountability for teacher effectiveness and learning outcomes; and an increase in the role of technology in the classroom.

Additionally we have observed education cited as a “springboard” for other national priorities such as economic recovery, trade imbalances, immigration, global positioning and international development. These references have moved education to the forefront of political dialogue indicating a greater potential for new policies to be introduced at the local, state and federal levels after the election year.

Areas of concern include the continued socioeconomic disparities among subgroups in U.S. society and how this disturbing trend inhibits the American ideal that every citizen should have an opportunity to learn. Likewise, the cost of education as a bar to access has moved to the forefront of the President’s agenda. Future initiatives must address social funding issues to help solve the socioeconomic divide and make education free or affordable to all citizens. Ultimately, determining the roles and responsibilities of all education stakeholders is essential to moving forward with policy recommendations that will positively influence the U.S. education system. The following is a summary of the six trends that we believe are working in a positive direction to enhance the quality, equitability, and accessibility of U.S. education.

Common Core State Standards. First, there is an increase in commonality among education systems. This includes the adoption of Common Core State Standards (CCSS) in 45 of the 50 states. While implementation plans are immature at best, the overall concept of a common core will greatly benefit mobile families and military children in particular. Many schools and school districts will develop quality curriculums this year to begin the process of requiring high standards throughout the education system. There is also an increase in articulation agreements and increase in commonality among the various levels of education. Bridges are being made between early childhood education, K-12, community colleges and other post secondary schools with an effort to promote lifelong learning and ease of transition among the various levels. Commonality is also seen in teacher certifications, where teacher and administrator licenses remain state controlled yet are often recognized more widely among a variety of states. Likewise, groups like the National Governors Association and the National PTA are working tirelessly to ensure states share best practices and to encourage parents and teachers to work in an engaged coalition to further their children’s education. The success of this CCSS initiative will only be measured with subsequent state tests, and future performance on National Assessment of Educational Progress and PISA tests.

Effectiveness. Second, the issue of accountability is a hot-button topic for many. The trend for greater accountability at all levels is a trend that will continue for years to come, as the competition for public and private funding for education increases. Issues of teacher effectiveness and learning outcomes are two areas that will demand a higher level of return on investment in the future. The linkage of education to national security and our nation’s economic recovery has added urgency to this movement. At a fundamental level, citizens must question the role of schools in the United States. Do schools exist for socialization, education or both? If the answer to that question is both, does the United States have the balance right when looking at academic rigor and accountability at some universities and school systems?

Developing accountability for teacher effectiveness is underway; however, measuring teacher effectiveness is difficult because there are a multitude of factors that impact student achievement. Isolating the impact of a particular teacher on a particular student and measuring that across an entire class, school, or state is complex. Although many studies on measurements of teacher effectiveness have been conducted over the past 20 years, the most current and perhaps most comprehensive is the Measures of Effective Teaching (MET) project, being funded by the Bill & Melinda Gates Foundation. MET is developing and testing multiple measures of

teaching effectiveness with a goal to improve the quality of information available about teacher effectiveness. This information will be provided to educational professionals to help them develop fair and reliable systems for teacher observation.⁷⁷

Within the current body of research of teacher effectiveness, there are three very promising methods that appear to effectively measure the relationship between teacher effectiveness and student achievement: value added modeling, teacher observation, and student feedback. Value added modeling (VAM) is one of the most mature measurements, although VAM is often criticized as a result of schools measuring student achievement on tests without isolating teacher effectiveness and calling the measurement “value added.” In order for the measurement to be valid, the VAM must be able to attribute student test results to a particular teacher, taking into consideration where the student began the year and normalizing for other factors. When conducted properly, VAMs provide an excellent assessment of student learning objectives versus actual outcomes. Likewise, teacher observation is a widely used measurement of effectiveness, but it must be conducted with an instrument that clearly identifies the specific outcomes on which the teacher is going to be observed and evaluated. In addition, the outcomes should have discriminators between each level of performance and example outcomes should be provided at each level of performance. This builds reliability into the measurement. One such instrument, the Framework for Teaching Evaluation Instrument, was developed by Charlotte Danielson and first published in 2007. It was enhanced in 2011 to be used in the MET project but still contains the same architecture of four domains (planning and preparation, the classroom environment, instruction, and professional responsibilities) and 22 components within the domains. The Framework for Teaching Evaluation Instrument can be used in print version by any educator, but in order to use the instrument as part of a software application to evaluate teacher effectiveness and as a component of teacher evaluations, the instrument must be purchased through an exclusive distributor.⁷⁸ This is not unique, and cost is one reason many school systems do not employ quality instruments for teacher observation and evaluation. Another reason is the cost and time associated with required observer training. Unless the observation and evaluation are done correctly and consistently across the board, the measurement of effectiveness is not reliable or valid. It takes time and an effective process to train and test observers to make sure they are capable of correctly evaluating a teacher. Finally, student feedback is another measurement that may be a predictor of teacher effectiveness. Currently, student feedback is not widely collected in K-12 public education, despite being used widely in higher education. Initial findings from the MET project suggest there is a high correlation between how students answer certain questions and teacher effectiveness. In their initial findings, the MET project reports that “[s]tudent perceptions of a given teacher’s strengths and weaknesses are consistent across the different groups of students they teach. Moreover, students seem to know effective teaching when they experience it: student perceptions in one class are related to the achievement gains in other classes taught by the same teacher. Most important are students’ perceptions of a teacher’s ability to control a classroom and to challenge students with rigorous work.”⁷⁹

Although research is ongoing, adopting policies to include measures of teacher effectiveness in teacher evaluations will enhance accountability and improve student achievement, outcomes that resonate at all levels of government. Many states have recently incorporated teacher effectiveness into teacher evaluations in order to compete for a portion of the federal government’s \$4 billion Race to the Top education reform initiative. Race to the Top funding requires a qualifying evaluation system that is rigorous, transparent, and fair for teachers

and principals and that: (a) differentiates effectiveness using multiple rating categories that take into account data on student growth as a significant factor, and (b) is designed and developed with teachers and principal involvement.⁸⁰ Critics have suggested that states have rushed to meet Race to the Top eligibility and, as a result, have adopted evaluation systems that heavily weight student test scores, not true value added models or other valid methods to isolate and measure teacher effectiveness. Nevertheless, the federal government's efforts to provide incentives to states through Race to the Top and other educational grants on a voluntary basis clearly articulate the Administration's education priorities without changing the law or putting federal barriers in place that usurp states' responsibilities or impede state progress.

Technology. Third, the role of technology is another trend that overall is heading in a positive direction. According to the 2011 *Horizon Report* there are four key trends effecting education technology. They include: (1) an abundance of resources and relationships via the Internet. Personal access to the internet using mobile devices provides access to a growing set of open content. This allows learners to have a variety of resources outside the formal classroom, (2) the expectation to work/study wherever and whenever. Learners expect mobile access to the Internet. They quickly become frustrated when that access is not available. Education providers are responding to this demand by providing wireless network access, (3) the world is becoming increasingly collaborative. Business is becoming increasingly global and distributed. Teams work together to address broad issues that are too complex for a single individual. These teams often perform their work from multiple locations thanks to the internet, and (4) cloud-based technologies.⁸¹ This trend provides immediate access to resources from mobile devices that were once the domain of desktop computers.

There are a number of emerging technologies that are responding to the four trends. In the near-term we can expect more learning from electronic books. Electronic books are becoming more common in schools and campuses. They now support note-taking and research. In the future, electronic books will have more features that provide an immersive learning experience. Mobile devices are also part of the near-term trend. The key to the advancement of mobile computing remains reliable and affordable access to networks. With access to the Internet from these small, capable computers students have instant access information and tools for learning.

Looking at education technology in the 2015 timeframe, we can expect two technologies to emerge -- augmented reality and game-based learning. Augmented reality layers information over a view of the normal world. This is a new way of delivering place-based information and supplements traditional computing devices (i.e., tablets and mobiles). Single-player card and board game learning is common today. The true potential of game-based learning is in its capability to foster team-based learning, problem solving, and process thinking.⁸² Open architecture and learning analytics are allowing parents and students to play a greater role in their education and in many cases take on a self-directed learning approach to their education. Teachers are now able to integrate technology into the classroom appealing to different student learning styles. Local education authorities are able to utilize off-the-shelf curriculum support tools such as YouTube videos, Khan Academy, and various other educational websites. While virtual schools exist, more districts have taken a more conservative approach to integrate online learning for one or two courses as well as expand into the online text book arena. This increased use of technology in the classroom may have the unintended positive consequence of influencing students' interest in learning and interest in STEM courses in particular, which has been at the forefront of educational reform for many years.

The proliferation of online learning opportunities, such as Virtual High School, Inc., has the potential to become a best practice for providing opportunities to students in rural or economically disadvantaged areas. Advanced Placement classes, for example, are now available online reaching countless students nationally and internationally. The Khan Academy is another online option that has transformed the delivery of education to students. While the total impact of technology in the classroom and the replacement of the traditional classroom itself has yet to be realized, it is very likely that technology will significantly influence collaboration and learning in a positive direction.

Socioeconomic Disparity. Fourth, although the metrics show a gross lack of national proficiency in math, science, and reading, along with an equally disturbing loss of international academic competitiveness, the reliability results would be even more unflattering if they were disaggregated demographically. On the 2011 National Assessment of Educational Progress, known informally as the “nation’s report card,” only 16% of black students and 20% of Hispanic students read at or above proficient, and only 12% of black students and 18% of Hispanic students were proficient in eighth grade math.⁸³ There exists valid concern in the implications of this situation when these Americans become the majority in a knowledge-based economy. Additionally, in the nation’s lowest performing schools that “produce 58 percent of all African-American dropouts and 50 percent of all Hispanic dropouts ... the number of seniors enrolled is routinely 60 percent or less than the number of freshman three years earlier.”⁸⁴ This dilemma of closing achievement gaps among demographic groups and the low percentage of high school graduates meeting customer demand are largely attributed to the underlying supply chain strategy and processes involved in educating America’s youth.

There are several best practices ongoing to help bridge the socioeconomic achievement gaps in education. In Chelsea, Massachusetts, we visited the John Silber Early Learning Center, which provides free public education to more than 900 children beginning at age four. This is a significant step to bridging the socioeconomic gap for families that cannot afford pre-school, which is not funded by most local education authorities. We observed another best practice in the Dorchester section of Boston at Tech Boston Academy (TBA). TBA has made significant strides in bridging the socioeconomic gap by simply providing a safe and secure environment for students who only a few years ago could not even safely walk to school. Finally, we observed several rural school initiatives to break down walls for students connecting them across the globe using technology. This initiative has proven successful in areas of Western Maryland, where poor students perform well on standardized tests and first-generation college attendance is on the rise. While our observations were limited in scope, ensuring an early best start to quality education, providing a safe and secure environment in which to succeed, and using technology were certainly the basic ingredients to bridging the socioeconomic academic gap.

Cost of Education. Fifth, over the past ten years, the cost of instruction at colleges and universities has increased by ten percent while the cost of student services rose by 19 percent and operations increased by 20 percent.⁸⁵ These increases are related to enhancements in dormitories, gymnasiums, the increasing number of administrators (non-educators),⁸⁶ and the rising cost of college sports programs. Due to this staggering cost growth, we can no longer afford to place our blind faith in a post-secondary education system that is essential to our economic recovery, national security, and the prosperity of future generations.

One of the primary issues with the cost of post-secondary education is the lack of transparency. This includes a lack of transparency as to how colleges spend money and their graduates’ success after college.⁸⁷ Although some metrics are available identifying graduation

rates, limited information is available about whether graduates are successful after graduation and if the education they received solidified their credentials and provided critical skills such as critical thinking and problem solving.⁸⁸ The fact that President Obama has put the cost of education on the national agenda as a policy issue arguably makes this a facet of the U.S. education system to monitor closely. States, too, must enhance their capability and accountability in tracking graduates through higher education and into career fields, a practice prevalent in European countries. While no institutions of higher education provide an “education guarantee,” students and taxpayers are beginning to demand a return on their education investments.

International Benchmarks and Global Competition. Finally, there is much we can learn from our global partners and competitors. As the United States expands its global initiatives, its success in education has significantly contracted. As highlighted in the 2010 *National Security Strategy*, “We have not adequately advanced priorities like education, energy, science and technology...all of which are essential to U.S. competitiveness, long-term prosperity, and strength.”⁸⁹ In a recent comparison among 57 countries, on virtually every international assessment of academic proficiency, American secondary school students’ performance ranked in the mediocre to poor status.⁹⁰ A nation whose students’ achievements are worth noting is Finland.

Finnish students’ academic achievements are astounding. Estimated at 5.2 million, the entire Finnish population is literate by the age of 15.⁹¹ Finland spends 6.4 percent of its GDP on education, which ranks 23rd in the world.⁹² In contrast, the U.S. population is estimated at 313 million, and 99 percent of the population is literate at the age of 15.⁹³ The United States spends 5.7 percent of its GDP on education, which ranks 37th in the world.⁹⁴ Similarly, results from the Trends in International Mathematics and Science Study and PISA sponsored by the Organization for Economic Cooperation and Development (OECD) in 2003, 2006 and 2009 revealed that Finland ranked number one in science and second in mathematics. In contrast, the United States ranked 21st and 25th of 30 OECD countries in science and mathematics, respectively.⁹⁵ Finland’s stellar academic achievements have gained worldwide attention, and in many cases, provide hope to others in finding measures to improve their education system. A close study of Finland’s education system reveals distinctive attributes that may contribute to its students’ academic success:⁹⁶

- investment in education opportunity for all children, regardless of socioeconomic background and cultural differences
- the same curriculum for all students
- a comprehensive pre-school program that emphasizes self-reflection and socialization
- non-compulsory after the ninth year
- built-in networks of schools and communities of teachers in municipalities
- teacher selection, certification and advanced degree attainment

Clearly not all of these lessons may be suitable for application across the U.S. national context; still, many facets of international academic success (with Finland as just one key example) would prove scalable to state and local practices and resources. Indeed, some of these issues, such as teacher selection and effectiveness, as well as common curriculum, have already garnered significant national attention. Nevertheless, the U.S. education system can only improve with significant course corrections to the present day disparities in funding, curriculum, and test scores.

Ultimately, these six key, interconnected trends not only will shape the U.S. education system over the coming years but also will test the United States' capacity to deliver affordable, accessible, and equitable education in an effective manner that fosters global competitiveness and innovation. In order to proactively determine the course of educational outcomes and achieve U.S. national security objectives, this paper next proposes actions in six vital areas.

Recommendations

The overarching fiscal strategy that supports the U.S. education system requires revision and re-prioritization. Actions to implement these revisions and reprioritization extend across federal, state and local responsibilities and require non-partisan and collaborative efforts among them. Of course, collaboration across these levels of government and within state and local educational jurisdictions is understandably a very difficult challenge, but the fact is that US national security is at stake and the quality of lives of our next several generations is in jeopardy. And although the limitation in length of this paper restricted a more comprehensive set of solutions, the following six recommendations are presented as an initial focus to improve the U.S. education system:

Increase the Number of STEM Teachers via Immigration Reform.

In light of the worrying shortage of STEM-educated workers in the United States, Congress should modify the immigration system to allow larger numbers of highly-qualified foreign STEM teachers to work temporarily (perhaps for as long as seven years) as K-12 math and science teachers in the United States. As the *Journal of Mathematics and Science* reported in 2004, “[t]he shortage of science and mathematics teachers is a growing problem in the United States.”⁹⁷ In addition, many STEM teachers are not as qualified as they should be. For example, of the chemistry and physics teachers we do have in public high schools, nearly one third did not major in their fields and do not hold a certification to teach those subjects.⁹⁸ In order to produce tomorrow’s STEM college students, we need quality math and science teachers to spark their interest today. While it would be ideal to produce more U.S.-born teachers and, more importantly (according to the National Science Teachers Association), to keep more of them in the profession longer,⁹⁹ the STEM problem is simply too urgent to wait for the long-term investments that these problems truly require. An infusion of talented, experienced foreign STEM teachers might be a short-term bandage, but when you are bleeding, you do what you must to stanch the flow of blood.

Improve Teacher Selection, Preparedness and Effectiveness.

Research concludes that teacher quality is the most important predictor of student achievement, while in comparison, “class size, teacher education, and teacher experience play a small role.”¹⁰⁰ To achieve the greatest impact on the U.S. education system, the country must raise the standards for becoming a teacher. When viewing a snapshot of college-bound high school graduates, “most of the nation’s future teachers come from the bottom third” of this demographic.¹⁰¹ At a minimum, individuals identified for selection and entry into teacher training programs should come from the top half of college-bound students. Each state must make a significant effort to engage its colleges and universities to raise the bar for entry into

teacher training programs. While budgets are tight, education cannot be ignored. Scholarships for teaching should be increased by offsetting the cash flow to ineffective social programs that provide little economic benefit to the nation. If the nation expects to produce STEM-educated students at a higher rate and with increased knowledge, the teachers providing the instruction must be of a higher quality. According to the National Council on Teacher Quality, at minimum, a basic skills test should be given to aspiring teachers, and the required passing score should be no lower than 60 percent, to at least reflect a baseline for a targeted academic skill set.¹⁰² While 60 percent is an arbitrary goal, the standard can be effectively raised over time if further adjustments are required. For example, the Praxis I test could be given as an entry requirement. Praxis I is a pre-professional skills test that evaluates basic skills in the “three R’s”: reading, writing and mathematics via multiple choice questions and an essay portion.¹⁰³ The purpose of the tests is to gauge whether a teacher candidate has the academic skills required to succeed in the pursuit of a career in education.¹⁰⁴ Along with the basic test, universities granting education degrees should be required by their states to have their candidate teachers demonstrate an increased proficiency level in math. A general consensus is an elementary teacher should have a solid understanding of math topics through Algebra II.¹⁰⁵ When compared internationally, U.S. teacher education programs are dreadful. Studies have shown the top performing international education systems are highly selective with their admission requirements for teacher candidates. Programs from South Korea, Finland, and Singapore produced teachers from the top five percent, top 10 percent, and the top 30 percent, respectively¹⁰⁶ while the United States pulls from the bottom 30 percent of high school graduates.

Additionally, once the prospective teachers make it into a program, the education and preparation imparted should be at a level to impart quality content knowledge. As can be expected from a decentralized system, “states have different guidelines for elementary grade mathematics preparation,” both in the number of courses required and the content of the course.¹⁰⁷ One recommendation is for universities to adopt a math model based on a 3/1 sequence: three mathematics courses to cover the required subject matter areas and one methods course for teaching principles for pedagogical knowledge.¹⁰⁸ The three mathematics courses should provide solid fundamentals for math foundations, algebra, geometry, and some statistics.¹⁰⁹ Conversely, the science course requirements should be modeled to ensure coverage of the wide range of fundamentals across the physical sciences (physics, chemistry, and biology) with laboratory work as well as the earth sciences¹¹⁰ instead of the current practice at most universities where science course selection is left to the prospective teacher candidate to choose. Students should also be allowed to content test out of the math and science course requirements, so as not to slow down the more advanced students.

To achieve the greatest and an immediate impact on education, states must focus on their teacher programs. They should work in concert with their colleges and universities and target prospective teachers from the upper academic levels of graduating high school students as well as increase the standards for program entry. Also, the programs must change their curriculum focus and impart more fundamental subject knowledge so that when combined with pedagogical skills, the prospective teachers become more effective in their craft.

Improve Early Childhood Education.

Early Childhood Education is largely unavailable or unaffordable to the students who need it the most. Research shows the current challenges in American education can be

significantly mitigated through attendance in a high quality Early Childhood Education (ECE) program. However, many states fail to offer publicly-funded ECE programs, leaving large segments of the U.S. population unprepared for kindergarten and success in early academic programs.

Compulsory public schooling should first be expanded to age four, and then transition eventually to include three-year-olds. This would require economic tradeoffs and a culture shift, which can be influenced by setting goals and articulating a consistent, long-term pursuit of reforms supplemented and bolstered by research and evidence. As a start, all states should formalize the development and implementation of Early Childhood Advisory Councils (ECACs). ECACs should then establish ECE-specific standards for both student learning and teachers/caregiver training and evaluation. In order to be able to implement the needed reforms in lean times, efforts among all ECE, welfare and other related state and local programs and services should be streamlined to pool funding and costs. If high-quality programs are made available, early childhood education is a key ingredient that the United States should blend into the education system. This critical policy change will generate tremendous returns on investment that will improve student performance throughout their academic careers, and better assure their success in becoming an effective contributor the U.S. economy and national well-being.

States should also require certain standards in ECE programs to ensure they are all of equally high-quality pedagogy and high quality content. Standards should be developed that cater to social and emotional development and provide opportunity for early learning through appropriate activities. These standards should be based on research and science and should be reviewed and revised as necessary to allow for the highest quality care. This includes stipulating standard qualification criteria for the ECE teacher workforce and ensuring that they are compensated at a level more commensurate with their required credentials.

In support of this state effort, the federal government should discontinue the Head Start program and redirect these funds to the states for universal ECE programs. Head Start is dedicated only to low-income students, leaving many in the middle-income bracket who cannot afford private preschool programs without an ECE option.

Even in a fiscally austere environment, universal ECE is not only affordable, but it is also a public investment that keeps on giving. As Robert G. Lynch describes in *Enriching Children, Enriching the Nation*, the estimated annual cost for states and the federal government to make high-quality ECE available to all is \$43.2 billion, based on a full seven million students when the program is fully phased in. The price tag decreases by \$10 billion when funds that are currently being expended for Head Start and other pre-K programs are redirected to these higher quality schools. A significant initial investment, the benefits quickly outweigh the costs through savings on the reduction of welfare programs, remediation and retention, correctional programs, and revenue through an increased tax base. States and the federal government should invest taxpayer dollars more heavily in programs with the greatest potential to improve the welfare of its citizens and society rather than spend on social programs with little economic benefit to the nation.

Reform K-12 Funding.

With great pressures for reduced spending expected over the coming years, all levels of government must ensure we get the greatest return on our investments and find ways to get more from our education funding. At the federal level, the Department of Education should continue to use and expand where possible the Race to the Top program to motivate and encourage K-12

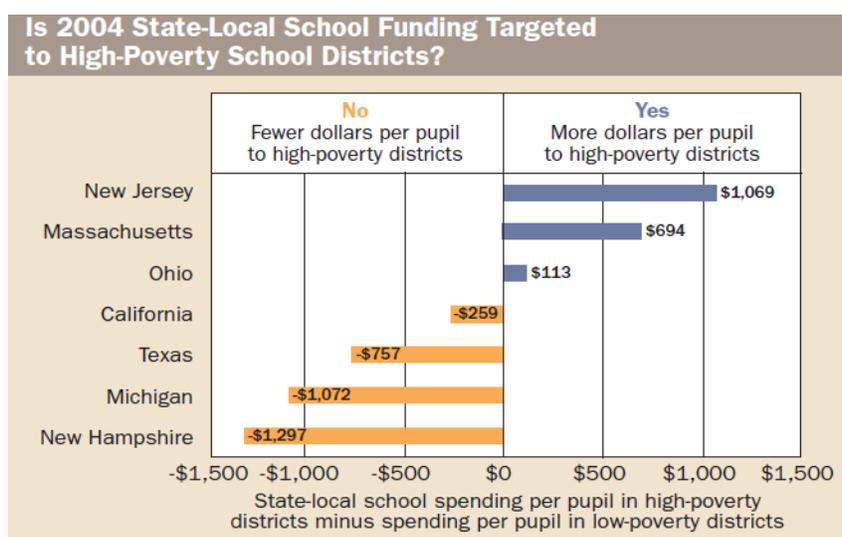
education improvements by the states. This program has proven effective in helping states make progress in numerous areas important for educational reform. For example, one of the criteria for states to compete for a portion of the \$4 billion in Race To the Top funding for education reform is a qualifying evaluation system that is rigorous, transparent, and fair for teachers and principals and that: (a) differentiates effectiveness using multiple rating categories that take into account data on student growth as a significant factor, and (b) is designed and developed with teachers and principal involvement.¹¹¹ Critics have suggested that states have rushed to meet Race to the Top eligibility and, as a result, have adopted evaluation systems that heavily weight student test scores, not true value added models or other valid methods, to isolate and measure teacher effectiveness. Nevertheless, the federal government's efforts to provide incentives to states through Race to the Top and other educational grants on a voluntary basis clearly articulate the Administration's education priorities without changing the law or putting federal barriers in place that usurp states' responsibilities or impede state progress.

The federal government should continue to utilize Title I funding to provide states with additional resources to facilitate greater education access and equity across the states and districts. As stated by Darling-Hammond, "...the federal government needs to assist in contributing to a more equitable education system by discontinuing the provision of higher funding to states that spend more, reinforcing rather than compensating for unequal resources across states."¹¹² What the federal government should not do is provide funding that simply supplants state and local funds or gives the states a funding crutch to reduce their funding efforts. As stated above, states should rework education funding algorithms to allow for more equity in the system and apply resources towards the schools/children of greatest need.

States should recognize and embrace their critical role in establishing and maintaining an education system that offers all children the opportunity to obtain the skills they need to become productive citizens within our society. States should identify public education as one of the three most important services state (along with health and safety/security) they provide to their people and to the nation in the collective effort of preserving economic prosperity and national security. While each state has codified their responsibility to provide some level of public education, much hand wringing and litigation continue over disparities in the quality and adequacy of the education provided. States should see their role as ensuring all our youth are adequately prepared for their civic duties and their place in the workforce of America. States should impart a vision that calls for educators, administrators, industry, and adult caregivers within each district to challenge, motivate, support, and expect high achievement for all students. Each school district and each school should be required to develop a master plan that provides a road map for how they will operate, monitor and improve to reach the student achievement goals established by the state. States should recognize and identify achievement goals that are mindful of international comparisons/competition as well as national. States should know that it is not good enough for their students to do well by state standards; their students also must do well by national and international standards.

States should optimize available resources and apply them where they are needed most. Considerable efforts have been made at the state level over the past 35 years to address education finance and better equalize funding that is available to school districts, with laws passed in some states (e.g., Texas), sometimes referred to as "Robin Hood laws," to have property-wealthy districts contribute funding to districts that are property-poor. However, despite the efforts, many states have not achieved the desired result. For example, a 2007 study conducted by the Lincoln Institute for Land Policy on education finance and property tax revealed that despite

state attempts (whether self-initiated or court-ordered) to more equitably apply education funding across various districts, only three of the seven states examined actually applied more dollars per pupil to high-poverty districts.¹¹³ This is generally because states have not accounted for the cost of services and the funds that high-need students require in the form of additional instruction and support. One of the notable discrepancies that still remain is over the way funds are provided for teacher salaries. Districts or schools that have more highly qualified and experienced teachers will receive more funding to cover the cost of higher teacher salaries. Those areas with lesser qualified and inexperienced teachers will receive less. Unfortunately, it is these lower paid teacher areas that are usually the urban and poor rural schools where higher quality teachers are most needed to address the low performance problems in those schools. States need only apply some basic economic efficiency theory in order to realize that by applying more resources to areas that are most disadvantaged, they will see greater marginal gains (i.e., greater return on investment). Investing strategically would actually help the economy, albeit slowly, as numerous studies show “an increase in the overall educational attainment in a nation increased the nation’s stock of human capital and thus increased the aggregate output and income.”¹¹⁴



Source: Education Trust (2006, 7).

As Darling-Hammond asserts, states that choose not to spend \$10,000 a year today to adequately educate a child of color will most likely (historical trends suggest) spend over \$30,000 a year in later years to keep that same child (now a misdirected young adult) in prison.¹¹⁵ A key takeaway from a review of research is that how funding is used is as important as how much funding is provided. States, districts and schools must be smart.

Some states have already started this process, but all should find ways to reduce the amount of overhead costs associated with school operations. States should take advantage of greater buying power for the support of school districts by combing requirements and reducing the administrative costs associated with contract administration. To the extent that school districts do not currently align with county borders, states should seek to reduce the number of school districts and combine those areas that make sense to reduce the amount of administration and overhead. For example, Santa Clara County, California, consists of 31 school districts, 31 school superintendents and 169 school board members. One of the districts within Santa Clara has only 85 students; and, statewide, 10% of the approximately 1,000 districts have fewer than

100 students.¹¹⁶ Another example is provided by comparing Massachusetts and Maryland. Massachusetts and Maryland each have approximately 900,000 students in K-12. However, Massachusetts has 299 separate school districts, whereas Maryland has only 24, one for each county plus the city of Baltimore. This may contribute to the spread in cost per student figures between these two states (\$14,540 per student in Massachusetts vs. \$13,737 per student in Maryland).¹¹⁷ While some argue that smaller districts do not necessarily mean higher overhead rates than larger districts, it seems intuitive that carrying the number of highly paid superintendents and administrators for relatively few students is not the most effective use of funds. This goes back to the point made earlier to keep funds focused on instruction (reach teachers and classroom support) rather than enterprise operations and administrative support services. States must pursue opportunities to reallocate limited resources and towards instruction wherever possible.

Only through a concerted effort at all levels of government, federal, state and local, can a real difference be made in K-12 education funding reform. All levels must work collaboratively to provide the resources in the classrooms and eliminate inefficiencies and wasteful redundancies in the system.

Strengthen Community College Systems.

In order to increase the number of college graduates, states and localities should strengthen their community college systems. The U.S. community college is an institution that, by virtue of an open admissions policy, takes virtually all comers and thereby makes higher education available to non-traditional learners such as students in their 40s (and older) and single parents. Many of these students are unable to study full time because of work and family obligations and/or are unable to afford the ever-rising cost of attending a traditional four-year undergraduate university. Our specific recommendation is that more four-year universities/colleges should negotiate guaranteed admissions agreements, whereby students who maintain a certain grade point average at a community college earn guaranteed admission to participating four-year institutions. The Virginia Community College System agreement, which includes the highly-selective and nationally-known University of Virginia and College of William and Mary (as well as a number of other universities, both public and private),¹¹⁸ would be an excellent model for other institutions to follow. More such agreements probably would motivate more students to finish at least their associate degrees because they would know that admission to a four-year institution would be a certainty. The end result of more college-educated Americans is a positive outcome not only to the individual and his or her family, but also to the local community and the nation as a whole.

Aside from the issue of more guaranteed admissions agreements, states should also consider transferring some funds from four-year universities/colleges to community colleges with the goal of having more students complete their first two years of post-secondary education at a two-year school rather than at a four-year school. The skyrocketing cost of four-year colleges has put the traditional path of graduating from high school and immediately pursuing studies at a four-year school out of reach for many students. The average state university raised tuition and fees by 130% from 1988 to 2008 while middle-class incomes actually decreased in real terms.¹¹⁹ In light of these difficult circumstances, harnessing the power of the nation's community colleges is an effective way to maximize the number of students who participate in post-secondary education and to do so without burdening them and their families with so much

debt when they graduate (the average 2011 graduate of a four-year university owed nearly \$23,000 when he/she completed his/her studies¹²⁰).

Community colleges, with their take-just-about-anyone philosophy, are in the business of offering the quintessentially American second chance. Policy makers and politicians, as they make hard budget choices in the years ahead, would do well to think long and hard before taking steps that might damage community colleges. As educator Horace Mann said, “Education, then, beyond all other devices of human origin, is the great equalizer of conditions of men . . .”¹²¹ So, too, is the U.S. community college.

Focus on the Costs of Higher Education.

The cost of post-secondary education is growing at a staggering pace, unemployment remains high, and incomes have not kept pace with the cost of post-secondary education.¹²² Additionally, due to the current economic crisis and the budget constraints at the state level, the states’ contributions to universities and colleges have declined, placing a larger burden on students through tuition increases. As stated by Kati Haycock, President of The Education Trust, “State colleges were once perceived as the most economical choice; however, with reduced state contributions, this is no longer the case.”¹²³ In order to address the increasing debt being incurred by today’s college students, we need to understand what is causing the increased costs and scrutinize where these valuable resources are being applied.

Although the debate about whether education is a public good continues, there is no doubt that an efficient and effective education system is critical to the nation and that the general public benefits economically, culturally, and socially from a healthy higher education system. Thus, the general public and students (the customers of institutions of higher learning) should be entitled to the same rights as shareholders of publicly held corporations. Traditionally, corporate shareholders are proactive in exercising their legal rights to manage and protect their investments and to elect their directors or representatives by evaluating corporate information to determine whether their representatives have successfully executed their fiduciary duties. To perform their assessments, shareholders review mandatory financial statements that must be submitted to the U.S. Securities and Exchange Commission (SEC). If a corporation does not submit its statements, it is at risk to have its corporate registration revoked by the SEC and can be delisted from the NYSE and NASDAQ. Additionally, corporate executives are personally accountability for the information within the financial statements.

Similar to the federal policy mandating publicly-traded companies to submit annual reports (10-K) to the SEC, public and for-profit institutions of higher learning must be required to produce and publish comprehensive financial statements including itemized revenues and expenses outlining the performance of the institution. Additionally, private institutions should be encouraged by federal and state regulators to publish similar information in a common format. This increased transparency will enable students to make informed decisions on their educational investments. Students, similar to shareholders, must be able to avail themselves of legal remedies if they are misguided by institutional leaders. With this increased transparency, students, like shareholders will be able to hold institutions of higher learning and their senior leaders accountable for their actions. All institutions, not only for-profit or institutions providing career education programs as outlined by the Obama Administration, should be required to develop, standardize, and publish post-graduation success metrics to ensure transparency of

dollars and to enable their customers to quantify the value of their education and the services they received.

The Department of Education must also initiate a study to assess current graduation requirements to include schedule and basic course requirements. A program at Southern New Hampshire University was able to reduce the costs per student by ensuring students were not wasting money on unnecessary credits.¹²⁴ Brigham Young University reduced the cost per student by 32 percent by shifting to a year-round calendar and offset the increased faculty expense due to the consistent tuition revenue.¹²⁵ These best practices must be evaluated to determine if the theme of Common Core can be expanded to post-secondary education to increase efficiency and improve affordability while not impacting the education process.

Upon completion of the Department of Education study, states should standardize the number of hours existing professors (state employees) teach. One of the best alternatives to reduce cost is to be more efficient with the resources you have and to ensure they are aligned to your mission – educating your students. Richard Vedder, head of the Center for College Affordability and Productivity, concluded that the average public research university could reduce its faculty size by at least 25 percent by requiring professors to teach one or two more classes a year.¹²⁶

Conclusion

Our national security is defined by and derived from our military strength, diplomatic strength, economic power, and ability to project influence globally. Education promotes and cultivates creative and critical thinking, supplies an educated and skilled workforce, and molds an informed citizenry. An educated citizenry contributes to and helps maintain and grow a productive and healthy economy, a strong military and a business and academic prowess that keeps the United States a major competitive force in the world.

If our education system is not healthy, it will not function effectively and will ultimately detract from the economy, the military, and our overall security as a nation. Beginning with a solid foundation -- making education accessible, affordable and equitable -- we have an opportunity not only to better U.S. citizens, families, and communities, but we also have a means to ensure our national security.

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