

Ensuring the Central New York Region's Global Success

Reversing our "skills gaps" through high school
education models

A report by:



Acknowledgements

This report was authored by Sandra Bishop-Josef, Ph.D., Stephanie Schaefer, Ph.D., and Sara Watson, Ph.D.

The following individuals also contributed to this report: Soren Messner-Zidell, Stefanie Campolo, Kara Clifford, Jenn O'Connor, Kalli Krumpas, Tamae Memole, Lisa Berry, William Christeson, David Kass, and Miriam Rollin.

READYNATION/AMERICA'S EDGE commissioned an analysis by Chmura Economics and Analytics of the educational and occupational trends in the state of New York.

READYNATION/AMERICA'S EDGE thanks Kate Gerson, Senior Fellow for Common Core and Educator Engagement, New York State Education Department, Jennifer Cleghorn, Senior Fellow for Communications, New York State Education Department, and Karen Knapik-Scalzo, Associate Economist, New York State Department of Labor, for their assistance with the report.

Who We Are

READYNATION/AMERICA'S EDGE is the nation's preeminent business leader organization working to strengthen business through better policies for children and youth. We educate policymakers and the public about effective investments that will help businesses compete in today's global marketplace, build a foundation for lasting economic security, and help children get on the right track to succeed in school and in life.

READYNATION/AMERICA'S EDGE *NEW YORK* is supported by tax-deductible contributions from foundations, individuals, and corporations. READYNATION/AMERICA'S EDGE *NEW YORK* accepts no funds from federal, state, or local governments.

Major funding for READYNATION/AMERICA'S EDGE includes: Alliance for Early Success • Buffett Early Childhood Fund • The California Education Policy Fund • The Annie E. Casey Foundation • Robert Sterling Clark Foundation • Bill & Melinda Gates Foundation • The George Gund Foundation • Hagedorn Foundation • Heising-Simons Foundation • The Leona M. and Harry B. Helmsley Charitable Trust • The William and Flora Hewlett Foundation • The James Irvine Foundation • W.K. Kellogg Foundation • The Kresge Foundation • McCormick Foundation • The J.B. and M.K. Pritzker Family Foundation • PNC Financial Services Group • Rauch Foundation.

Ensuring the Central New York Region's Global Success

Reversing our "skills gaps" through high school education models

Executive Summary

If current education and labor market trends continue, New York will face a deficit of 350,000 workers for current mid-level skill jobs—those requiring more than a high school degree but less than a four-year degree. Looking forward, nearly seven in 10 jobs created in New York between 2010 and 2020 will require some type of formal education beyond high school, and over 80 percent of the fastest growing and high-wage jobs will require at least a two-year degree. In that same period of time, 95 percent of jobs in the areas of science, technology, engineering, and math (STEM) occupations will require postsecondary education. By 2020, throughout the state, more than two times as many job openings requiring postsecondary education will exist, as compared to openings for those with a high school education or less.

The need for middle- and highly-skilled workers is also evident in the Central New York Region. The New York Labor Department predicts that 60 percent of the fastest growing occupations in the area will be middle- and high-skilled occupations requiring postsecondary education. Many of these occupations are in the health care field, including physical therapy assistants, diagnostic sonographers, emergency medical technicians, health educators, and family and general practitioners. Nearly two-thirds of high-growth and high-wage jobs in this region will require an associate's degree or higher by 2020.

The skills deficiencies go beyond those related to specific occupations. Central New York Region businesses are also concerned about the lack of increasingly important "soft skills"—communication, collaboration, and critical thinking—required for virtually any occupation in today's world. Nationally, three out of four executives believe that soft skills will become even more important in the next three to five years because of global competition and the pace of change in the business environment.

A pipeline of skilled workers will be hard to create when 26 percent of New York high school students fail to graduate on time, and only 35 percent of our public school students graduate "college- and career-ready." In some cities in the Central New York Region, the proportion of students failing to graduate on time is worse than the state average (e.g., Syracuse, 52 percent; Utica, 42 percent; Rome, 30 percent). While New York State ranks number two in the nation on education spending, we are also spending



Montly Rakusen - Getty Images

\$70 million on remedial education.

To reverse these skills gaps, the Central New York Region business leaders of ReadyNation/AMERICA'S EDGE urge greater access to innovative education models that can equip our high school students for success in both college and careers. Both promising and proven high school education models provide relevant and core academic curricula that prepare

students for education and careers beyond high school. These models, including many that are being implemented in Central New York, utilize project-based learning, numerous written and oral communication activities, and work-based learning opportunities. Students are taught how to apply the knowledge they have acquired in one subject across multiple situations; students "learn to learn."

While we concentrate on making education relevant, we must continue a deep, ongoing dialogue about what the P-12 Common Core Learning Standards (CCLS) are (and aren't), how they are being implemented, and what they mean to our children's success. Continued implementation of New York's new rigorous CCLS will better ensure students develop the critical thinking and processing skills required by today's businesses. We will be able to improve education so that students are more college- and career-ready by assessing student learning to determine how they are progressing, and using this information to influence what and how they are taught. Finally, we must ensure that teachers are well-prepared to effectively teach these enhanced skill sets and are accurately assessed to determine that students are, in fact, developing the skills the business world now requires.

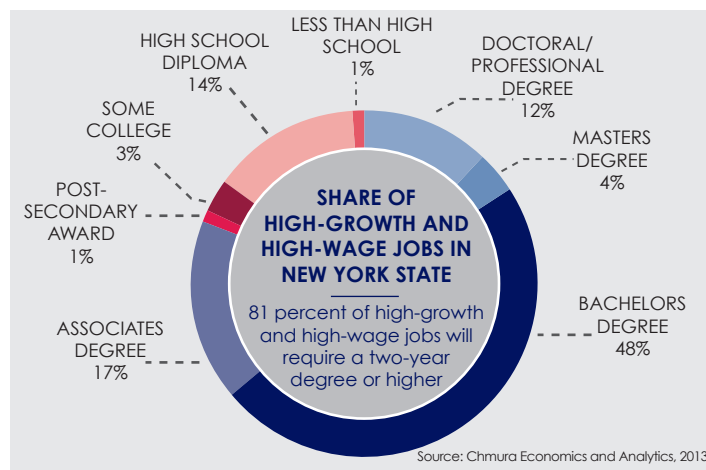
The bottom line: The future of New York's and Central New York Region's economy depends upon the caliber of our workforce. As we continue the debate on meaningful education reform, the conversation must include promising and evidence-based education approaches and college-and-career-readiness standards that develop and assess skills in our students that businesses expect—and need—from their workforce. New York business leaders are calling for continued implementation of New York's new rigorous standards and aligned assessments, and greater access to innovative high school models to better equip young people for success in both postsecondary education and their future careers.

Ensuring the Capital Region's Global Success

Reducing our “skills gaps” through high school education models

Unprepared Students, Unprepared Workforce: Although businesses have always needed workers proficient in the “3 Rs” –reading, writing and arithmetic – today’s fast-paced, international marketplace requires even higher proficiency levels of these hard skills. But they are too often lacking, especially among those entering the workforce.

- According to the Nation’s Report Card, only 35 percent of New York 8th graders are proficient in reading, only 33 percent are proficient in math, and only 29 percent are proficient in science.¹
- Twenty-six percent of New York high school freshmen do not graduate within four years.² For several Central New York Region cities, the proportion of students failing to graduate on time is higher than the state average, as in the Syracuse City School District (52 percent), the Utica City School District (42 percent) and the Rome City School District (30 percent).³
- Only 35 percent of New York public school students graduate “college- and career-ready”. In Syracuse, only 7 percent graduate college- and career-ready. In Utica, the figure is 13 percent and in Rome 20 percent.⁴
- Only 43 percent of 2013 high school graduates in New York taking the ACT admissions test met college readiness benchmarks in the four core areas tested– English, reading, mathematics and science.⁵
- In spite of the fact that New York State ranks second



in the U.S. on education spending, we still spend \$70 million on remedial education throughout the SUNY system.⁶

In addition to the “hard skills,” employers are increasingly concerned about a lack of “soft skills” – communication, collaboration, and critical thinking. In a survey of 2,000 executives conducted by the American Management Association, three out of four executives believe that soft skills will become even more important in the next three to five years because of global competition and the pace of change in the business environment.⁷ In that same survey, nine out of ten executives say that soft skills like communication, collaboration and critical thinking are important to support business expansion, but less than half of those executives rated their employees as above average in those skills.⁸

The Growing New York Skills Gap

With weak education outcomes, dissatisfied employers, and jobs that place an increasing emphasis on soft skills, how will the New York workforce of the future fare? Data suggest that New York needs to make major changes to keep its workforce competitive domestically and internationally.

Examples of Middle-Skills Jobs New York Can't Live Without:



- EMT
- Firefighter
- Police officer
- Carpenter
- Electrician
- Plumber
- Dental hygienist
- Medical lab technician
- Aircraft mechanic
- Heating and AC installer
- Industrial machinery mechanic
- Machinist
- Legal secretary
- Computer support specialist

Middle-Skill Job Mismatches

If current education and labor market trends continue, New York will face a deficit of 350,000 workers with mid-level skills to fill current jobs.⁹ Middle-skill jobs—those that require less than a four-year degree, but more than a high school diploma—account for at least one-third of all New York jobs.¹⁰ Middle-skill workers include registered nurses, health technicians, carpenters, construction workers, installation/repair technicians, production workers, and transportation/material moving workers. While middle-skill jobs in New York comprise 33 percent of the jobs statewide, the supply of workers today with these skills comprises only 29 percent of the workers.¹¹

“On a regular basis, employers tell me they have well-paying jobs available that they cannot fill because they lack qualified job applicants. This report offers some excellent strategies to bridge the current skills gap by giving high school students alternative career pathways.”

Assemblyman Anthony Brindisi,
Utica

Science, Technology, Engineering, and Math (STEM) Occupations

Jobs that are heavily reliant on technology are growing fast. The number of STEM jobs in New York is expected to grow by 12 percent between 2010 and 2020.¹² Workers often need postsecondary education to capitalize on these types of jobs. In fact, 95 percent of New York STEM jobs will require postsecondary education by 2020, and 75 percent will require a bachelor's degree or higher.¹³

Health care jobs are also growing in New York, with 22 percent growth expected between 2010 and 2020 compared to 13 percent growth in other jobs. But only 16 percent of health care jobs in 2020 will be for those with only a high school diploma; 84 percent will require some postsecondary education.¹⁴ Over half of New York hospitals surveyed reported difficulty recruiting experienced nurses. A shortage of nurses with the right experience was cited as the primary issue for 41 percent of hospitals with recruiting problems.¹⁵

The need for middle- and highly-skilled workers is evident in the Central New York region. Sixty percent of the fastest growing occupations in the area are middle- and high-skilled occupations and require postsecondary education. Many of these occupations are in the health care field, including physical therapy assistants, diagnostic

FOURTEEN of the 25 fastest growing occupations in New York require postsecondary education.²⁵ In Central New York, nearly two-thirds of the high-growth and high-wage jobs will require an associate's degree or higher by 2020.

developers and physical therapists.²³

The situation in Central New York is similar, with the anticipated growth rates for occupations skewed towards jobs that are either high-skill or medium-skill:

- Between 2010 and 2020, Central New York jobs requiring a bachelor's degree are expected to grow nine times faster than jobs for those with only a high school diploma.
- Nearly two-thirds (65 percent) of the high-growth and high-wage jobs in this region will require an associate's degree or higher by 2020.²⁴

sonographers, emergency medical technicians, health educators, and family and general practitioners.¹⁶

Rising Education Requirements

The increased level of skills necessary for future jobs directly correlates to increased educational requirements for those jobs. The anticipated growth rates for occupations in New York are skewed towards jobs that are either highly-skilled, needing a bachelor's degree or above, or middle-skilled – requiring more than a high school degree but less than a four-year degree.¹⁷ Consider these projections for New York:

- By 2020, throughout the state, there will be more than two times as many job openings requiring postsecondary education, as compared to openings for those with a high school education or less.¹⁸
- There will be 3.3 million total job vacancies between 2010 and 2020, as a result of new jobs and openings from retirements and career switches.¹⁹ While 15 percent of New Yorkers lack a high school diploma or equivalent, only nine percent of these job vacancies will be available for those without a diploma.²⁰
- In contrast, between 2010 and 2020, occupations that require an associate's degree are projected to grow more than twice as fast as occupations that only require on-the-job training.²¹
- By 2020, 69 percent of all jobs in New York will require some postsecondary education, the 17th highest rate in the country-but only 58 percent of New Yorkers 25 or older have this level of education.²² Among the fast-growing occupations that are likely to be hard hit are pharmacy technicians, software

Acceleration of the Skills Gap

Experts believe the recession may have accelerated a demand for highly-skilled workers; many companies turned to workers with higher skills while not replacing laid-off lower-skilled positions because they were able to automate these jobs or ship jobs overseas. Traditional manufacturing was one of the hardest-hit sectors in the Empire State in the last decade. The sector lost almost 300,000, or 40 percent of all manufacturing jobs, from 2000 to 2010.²⁶ Between 2010 and 2020, we are projected to lose an additional 44,000 jobs—a 10 percent reduction—due to positions shifted out of the state or country and curtailed demand from increased productivity.²⁷ However, despite these losses, manufacturing remains a vital part of the Upstate New York economy, with one in nine workers employed in this sector.²⁸ Computer and electronic product manufacturing in the state has contributed to an increase in high-tech jobs. This sector also provides a fairly large number (over 5,500) of very high wage jobs in Central New York, with average weekly wages 83 percent above the all-industry average wage in 2009.²⁹ The highly-skilled workers who lost their jobs in other manufacturing sectors can help meet the accelerated demand for highly-skilled workers brought about by the recession.³⁰

An aging population could also be a factor. The leading edge of the baby boom generation turned 65 in 2011, and the share of New York's population age 65 or older is projected to rise from 13 percent in 2000 to 18 percent in 2040.³¹ Retirements of highly-trained employees, coupled with increased demand for health care as the area's population ages, could lead to increased shortages in areas like nursing. Registered nurse jobs in New York are projected to grow by 14 percent, or 2,490 new jobs, annually until 2020.³² But a survey of New York hospitals

found that over 75 percent of the nursing workforce is over age 40, and almost 15 percent of the workforce is expected to retire in the next five years—over 11,000 RN retirements. Due to educational limitations, the number of new nurses is not keeping up with demand. Researchers have thus forecasted a nursing shortage for the next 15 years.³³

Geographic shifts may also impact worker shortages. Population projections from the U.S. Census Bureau suggest that the overall working-age population (ages 16-64) in New York will decline by 6.5 percent between 2010 and 2025, a slide of over 860,000 workers.³⁴

The United States Is Falling Behind

New York is not alone. Thanks to technology, more and more American workers are now directly competing with workers from around the world. How U.S. students stack up against students from other countries is, thus, increasingly important, and the United States is no longer on top.

The U.S. high school graduation rate ranks in the bottom quarter of developed nations.³⁵ On an international test of applied knowledge and skills, the Programme for International Student Assessment (PISA), U.S. 15-year-old students scored significantly below the average for industrialized nations in math and trailed behind leading countries in reading and science.³⁶ The U.S. is getting worse results while spending almost 40 percent more on education: U.S. spending per student in 2010 was over \$11,800, compared to an industrialized nation average of about \$8,600.³⁷ And in New York, education spending per student is even higher, at about \$19,000 in 2011.³⁸

“The skills gap is an issue that warrants immediate attention – our economic competitiveness and national security depend on having a readied STEM workforce. Now more than ever, business and education must partner to ensure that students are being prepared for entrance into college and the innovation economy.”

Heather Briccetti
President and CEO
The Business Council of
New York State, Inc.

Although higher education attainment in the U.S. has continued to climb, we are not keeping pace with other nations and we are not growing fast enough to keep up with labor market demand. As recently as 1995, the U.S. was tied for first in college graduation rates. But as other countries dramatically improved their college completion rates, the U.S. has fallen to 14th out of 25 industrialized nations—decidedly in the middle of the pack.³⁹

High Cost of the Skills Gap

The lack of a skilled workforce comes at a high cost for individuals, businesses, and the economy.

The unemployment rates in New York for occupations that require a bachelor’s degree or higher are at least three percentage points lower than the unemployment rates for occupations that are typically filled by someone with a high school diploma or less. The wage gains from even attempting some postsecondary training are clear across the state as well: workers with an associate’s degree earn almost \$12,000 more than a high school graduate and more than \$20,000 more than a high school dropout.⁴⁰ In Central New York, workers with an associate’s degree earn \$9,000 annually more than a high school graduate, and over \$24,000 more than a high school dropout.⁴¹ People working in STEM careers, most of which require postsecondary education, earn, on average, over \$61,000, which is 73 percent more than the average salary for all workers in the Central New York Region.⁴²

Graduating an additional 1,000 of New York’s high school dropouts could result in impressive economic benefits. These 1,000 extra graduates would likely:

- collectively earn \$12 million more in an average year than they would have without a diploma;
- spend \$1.2 million more each year purchasing vehicles;
- buy homes worth \$25 million more by the time they reach the midpoint of their careers;
- support 80 new jobs in the state;
- increase the gross state product by \$16 million; and
- increase state revenues by \$1.3 million annually through their increased spending and investments.⁴³

High school dropouts are so much less productive than high school graduates that each new class of New York dropouts will earn \$9.8 billion less over their lifetimes than their high school graduate peers.⁴⁴ These staggering earning losses translate into less spending power, fewer contributions to the tax base, and lower productivity. The returns from a college degree are even greater. The average lifetime earnings of an individual college graduate are \$2.1 million higher than those of a high school dropout and \$1.6 million higher than a high school graduate.⁴⁵

Remedial courses and training to help students catch up and get on track for higher education and training are helpful, but they are expensive and inefficient. About half of all students entering the state community college system require remediation.⁴⁶ Remedial education costs students and the state an estimated \$248 million annually, and up to \$348 million annually after factoring in the reduced lifetime wages of students taking remedial courses.⁴⁷

Changing Course

As New York and the nation wrestle with the vitally important debate on education reform, businesses know that career relevance must be incorporated into the classroom. Too many students do not understand why they need to know what they are being taught, lose interest in school, and then do not develop the deeper learning skills employers expect them to have. Innovative high school education models help students stay engaged in school so

they graduate with a concrete understanding of what they will need to succeed in the workforce and education post-high school, thus better ensuring New York businesses have a workforce armed with the skills required in a global marketplace.

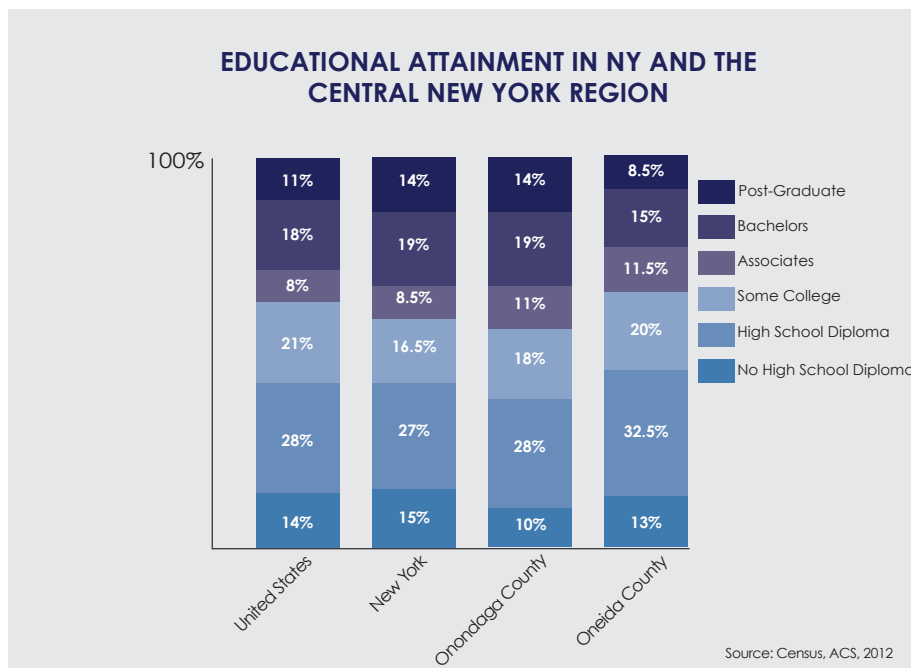
Developing Deeper Learning Skills

Business leaders know that young people entering college and the workforce need a mastery of core academic subjects. But they also need more:

- Students need to develop the critical thinking and problem-solving skills necessary to find answers to challenges that, unlike with multiple choice tests, are not on the page in front of them
- Part of those skills come from learning how to learn—knowing how to find out what they do not already know.
- Effective written and verbal communication skills are necessary to work as part of a team, or to interact with the public.
- And, to work as a team, they will have to master collaboration skills, such as interpreting others’ messages and responding appropriately.⁴⁸

This preparation includes going beyond rote learning to transfer what they have learned in one subject and apply it in novel ways or different settings in the workplace. It also

requires the ability to regulate one’s own behavior and emotions to reach goals. Research cited by the National Research Council, for example, shows that being conscientious—“being organized, responsible, and hardworking—[has] the strongest correlation with desirable work and educational outcomes, [whereas] anti-social behavior ... is negatively correlated with these [desirable] outcomes.”⁴⁹ These are skills that can be taught and reinforced, especially in the workforce. All of this goes beyond “textbook” learning to provide students and workers with the skills now needed in a competitive global market.⁵⁰



New York State P-12 Common Core Learning Standards

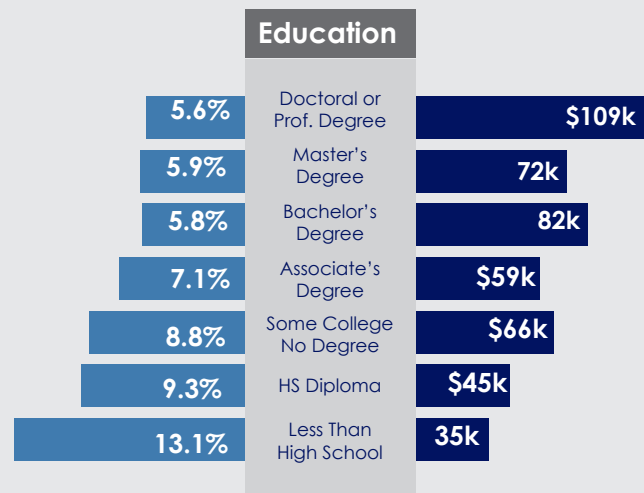
The New York State P-12 Common Core Learning Standards (CCLS), when fully implemented with the assessments that measure them, will ensure that students develop the deeper learning skills required by today's businesses.

Until recently, each state has had its own particular educational standards and tests to assess student achievement. Standards varied greatly across states and even among school districts within a state. State tests have also varied in content, design, and rigor. Further, state standards were not established with the end goal in mind: student success in college and the workforce. As a result, there has been no objective way to know whether a student is on track to graduate high school with the skills needed for postsecondary education or a solid, family-sustaining career. Not only has a student with a high school diploma from a state with high standards likely come with a different skill set than one from a state with low standards, but state standards overall have not emphasized the type of problem solving, critical thinking, and communication skills needed after high school.

The CCLS offer a way out of this dilemma. These standards, which were developed and led by the nation's governors and chief state school officers, have been voluntarily adopted by 44 states, as well as the District of Columbia, four U.S. territories, and the Department of Defense Education Activity. The New York State Board of Regents adopted the CCLS in July 2010,⁵¹ and in July 2011 New York added specific standards for pre-K and English Language Learners.⁵² In the summer of 2011, intensive professional development began, Engage NY was launched, and teachers were asked to try one Common Core unit per semester during the 2011-2012 school year. In 2012-2013, all schools in the state were expected to fully implement the standards—meaning all teachers were expected to shift their practice to better prepare students for the demands of these standards.

The CCLS establish a shared, rigorous set of educational standards for English Language Arts and mathematics for P-12 education. The standards reflect businesses'

Unemployment and Earnings by Education Level in New York State



Note: Analysis of 2011, 2012 BLS data. Unemployment rates are for adults age 25 and up. Earnings are for ages 25 - 64.

Source: Chmura Analytics, 2013

needs for a highly-skilled workforce that has mastered core academic content and is able to think critically, solve complex problems, and communicate effectively (i.e. deeper learning skills). The CCLS establish the content and skills that children must learn at each grade level, but they do not tell teachers how to teach, nor do they specify a curriculum; these important decisions remain under local control. In New York State, teachers have optional sets of curricula on EngageNY.org to use as they plan and execute students' learning experiences.

As a result of the implementation of the CCLS, changes have occurred not only in standards but also in the assessment of student learning so that they better measure the standards. There are no new tests as a result of the implementation of CCLS; rather, New York State is deeply engaged in a revision of the current State assessment program to align it with the CCLS. The summative assessments have changed and no longer encourage low-level skills such as memorization and recall but are rather now designed to measure the deep learning skills students have attained such as thinking critically, using evidence from text, and communicating accurately and effectively. These statewide assessments have an important role, in that students benefit when we have measures to determine whether or not every student, everywhere, has the same basic foundation to prepare them for college, careers, and life. The information from the assessments will also help

educators identify and share educational practices that work with other schools and districts.

Beginning with the 2012-2013 administration, the statewide assessments in Grades 3 - 8 English Language Arts (ELA) and Mathematics measure the CCLS. Similarly, some ELA and Mathematics Regents Exams will be aligned to the CCLS beginning in the 2013-2014 school year, and the rest will follow suit in the 2014-2015 school year. New York is a member of the Partnership for Assessment of Readiness for College and Careers (PARCC)⁵³ consortium, one of the two main groups of states developing assessments based on the Common Core. The Board of Regents is still considering whether to adopt the PARCC assessments for New York State and will be informed by the field test, which is being administered in Spring 2014.

Because the CCLS addresses higher-level skills than New York's prior standards, the new assessments are different and more challenging than previous state tests. As a result and as expected, there was a decrease in the percent of students that were deemed proficient in 2013. This is not because students and teachers were doing worse or less, but because New York is now accurately measuring how well students are meeting higher standards.

In addition to state-level summative exams, locally-determined benchmarks and formative assessments have provided teachers a way to determine students' understanding of concepts throughout the school year. This will assist educators so that they can adjust teaching in real time, focus on specific student needs, and strengthen student learning.

The Common Core standards can help ensure that students are receiving a high-quality education consistently, from state to state. The new educational standards and assessments will not magically turn things around overnight, although teaching and learning are transforming in schools and districts across the state. As teachers and students adjust to the new standards and assessments, student learning will deepen and scores will rise. And, as a result of the higher level standards, New York's students will be better prepared for success in postsecondary education and the workforce.

NYS P-TECH, Syracuse

New York became the first state in the nation to expand the Pathways in Technology Early College High Schools (P-TECH) program statewide. The goal of the P-TECH School is to prepare students with the advanced academic, technical, and essential workplace skills and industry credentials they will need for today's advanced manufacturing jobs. NYS P-TECH was launched as a public-private initiative in partnership with IBM, which will engage with the schools by providing tools, training, and support. The 16 winning schools, selected through a statewide competition, represent the top industries in New York's 10 Regional Economic Development Council areas.⁵⁵

Selected as one of the 16 winners, the Syracuse City School District (SCSD) will better align high school education directly with local career opportunities in advanced manufacturing. The SCSD will work in partnership with The Manufacturers Association of Central New York (MACNY) and Onondaga Community College (OCC) to implement a six-year program on the Institute of Technology @ Syracuse Central High School campus. The manufacturing companies of MACNY will contribute to the partnership through mentoring, job-shadowing, career fairs, and internships for P-TECH students.⁵⁶ SCSD and OCC will create the curriculum for the program with input from local manufacturers.⁵⁷

The Syracuse P-TECH School will target at-risk students and will enroll approximately 56 incoming ninth graders beginning in the 2014-2015 school year, and will add an additional class of 56 ninth grade students in each subsequent year. After completing the six-year program, successful P-TECH students will have earned a NYS Regents Diploma/Regents Diploma with Advanced Designation and a Technical Endorsement, recognized industry credentials, and a no-cost Associate in Applied Science (A.A.S.) degree from OCC in Electrical Engineering Technology or Mechanical Technology. Furthermore, successful graduates will be positioned as the top recruits for available positions at partnering local manufacturing businesses.⁵⁸

Enhancing Deeper Learning Skills

Master Core Academic Content

Students must be able to demonstrate a baseline understanding of core content knowledge and apply facts, processes and theories to real-world situations.

Think Critically and Solve Complex Problems

Students must be able to apply tools and techniques learned from core subjects to formulate and solve problems, using them to evaluate, integrate and critically analyze multiple sources of information. Students must be able to learn to reason and construct justifiable arguments creatively, encompassing non-linear thinking and persistence.

Work Collaboratively

Students should demonstrate the ability to cooperate together to identify and create solutions to social, vocational and personal challenges. This includes the ability to identify common goals; to organize resources necessary for meeting group goals; and to learn to communicate and incorporate multiple points of view to better achieve goals.

Communicate Effectively

Students must be able to organize their thoughts and findings in clear, meaningful and useful ways and express themselves in both written and oral forms. They must be able to listen well and present others' concepts, as well as their own.

Learn How to Learn

Students must be aware of their strengths and weaknesses and be able to monitor and direct their own learning. They should understand and be prepared to meet changing expectations in a variety of academic, professional and social environments.

Developing Academic Mindsets

Students must develop academic mindsets that are positive, motivated, and resilient. Students should commit to completing their work, meeting goals, doing quality work, and searching for solutions to overcome obstacles.

Developing Skills Businesses Need through High School Education Models

One of the best—and proven—ways to impact the skills gap is to equip high school students for success in postsecondary training and/or education and their future careers. Students need to understand how education is relevant to a career, know their options and what is expected in the work place, and develop communication, collaboration and critical-thinking capabilities. Innovative models and approaches are helping them achieve these goals.

A common element to these proven and promising high school education models is the integration of rigorous academics, career-relevant instruction, support services for students and real-world, work-based learning experiences supported by industry and community partners over a three- or four-year period. A number of schools have also adopted educational approaches that focus on problem-solving, communication, and collaboration skills.

Career Academies and Pathways

Career Academies demonstrate a proven approach found throughout the United States and in New York that incorporates real-world, work-based learning. Although some programs are stand-alone schools, including charter or magnet schools, most are pathways within larger comprehensive high schools. Often called a “school-within-a-school,” pathways typically comprise no more than 200 students who stay together with the same teachers for the duration of the program. That continuity helps create close relationships among the students and with their teachers. It creates the kind of “team player” mentality employers too often find lacking in their younger employees.⁵⁴

Key elements in proven and promising high school education models, such as Career Academies, are:

- *Work-based learning* such as mentorships, job shadowing opportunities and internships with local employers. This brings actual career relevance to the students, deepening their understanding of how

INNOVATIVE NEW YORK PROGRAMS THAT IMPLEMENT DEEPER LEARNING

The LaFayette Big Picture School, LaFayette

The LaFayette Big Picture School is an innovative high school that focuses on college preparation for all students. The school opened in September 2008 and, though all students may apply, was initially targeted to at-risk students.⁷² The first class graduated in 2012, with a four-year graduation rate of 73 percent, a significant success for high-risk students.⁷³ In the 2013-2014 school year, the LaFayette Big Picture School expanded its enrollment to 50 students in grades 9-12, up from its first class of 15 students. The student population now includes both students at-risk of dropping out and those interested in alternative learning, including many who elect to come from other school districts. The current enrollment is 34 percent Native American and 6 percent African American and almost half are eligible to receive free or reduced lunch.⁷⁴

The goal of the LaFayette Big Picture School is to prepare students for the real world. Students are required to earn the same number of credits, take the same Regents exams, and graduate with a New York State Regents diploma, just like their peers at other schools, but the classrooms and activities look much different than their traditional counterparts. Students experience what will be expected of them after high school through work-based opportunities and project-based work that includes internships, service learning, portfolios, oral presentations, and collaboration between students, advisers, and mentors.⁷⁵ The LaFayette Central School Board of Education conducted a review of the school in February 2014. They found the school to be consistent with Part 100 of the NYS Commissioner's Regulations for graduation requirements and related areas and included several recommendations with their findings.⁷⁶

Innovation Tech, Liverpool

The Onondaga-Cortland-Madison Board of Cooperative Educational Services (OCM BOCES) will open Innovation Tech in September 2014, with a total of 60 students in 9th and 10th grades. The school will eventually grow to accommodate a total of 120 students, grades 9-12. Innovation Tech will differentiate itself from traditional education by integrating interdisciplinary classes, establishing student-mentor relationships, and presenting opportunities to practice collaborative group work with peers and participate in work-based learning opportunities.⁷⁷ Innovation Tech will join the New Tech Network (NTN).

The school will emphasize project-based learning, teaching students first-hand the collaboration and communications skills necessary to accomplish work in small groups. Students will work closely with their teachers as professionals instead of as authority figures. Students will also participate in internships with local businesses and will work with local colleges to graduate high school with at least 12 college credits. The BOCES is also planning to open another, similar high school in the Cortland area in the fall of 2016.⁷⁸

traditional academics are used in careers. It also helps direct them toward training and education opportunities where they will acquire the skills New York employers are seeking.⁵⁹

- *Project-based learning*, which helps students make connections across subjects and brings greater relevance to classroom learning. Students work together on projects, developing academic and technical skills, as well as more experience with collaboration, communication, and critical thinking.⁶⁰
- *School-based enterprise*, like student-led businesses or community service initiatives. This is another

form of work-based learning. It allows students to design, produce and deliver real products and services.

- *Support services*, including counseling, as well as additional instruction in reading, writing, and mathematics. This helps students keep their grades up and stay on track for graduation.⁶¹

In a well-designed study of Career Academies across America, students were twice as likely as nonparticipants to be working in the computer, engineering, and media technology sector eight years after graduation, thus helping to increase the supply of STEM workers.⁶² Young people who went through Career Academies earned more and were more productive than those not in the program.⁶³

Other Innovative Education Models

A number of schools around the nation have adopted educational approaches to promote deeper learning and help ensure that students focus on these critical problem-solving, critical thinking, communication, and collaboration skills. Included among the educational models with a focus on developing these skills are Big Picture Learning and the New Tech Network. Although evaluation research has not yet assessed the effectiveness of these models, their focus on these key learning skills that businesses need shows promise for helping students be better equipped for problem-solving, critical thinking, communication, and collaboration.

In New York, there are several school models that focus on cultivating deeper learning skills.

- The Big Picture Learning (BPL) education model focuses on five learning goals: empirical reasoning, quantitative reasoning, communication, social reasoning, and personal qualities, with an emphasis on work-based learning.⁶⁴ Unlike traditional schools, Big Picture School students earn their credits through individual learning plans that are based upon their interests and passions.⁶⁵ BPL was established in 1995 and has now served thousands of students nationwide. Big Picture schools across the country boast a 92 percent graduation rate—more than 20 percentage points higher than the New York state and national averages and nearly double the rate for inner city students—and send nearly 95 percent of their students for

CTE Pathway to Graduation

New York State policymakers are taking action to directly address the state's growing skills gap of qualified workers. State Senator David J. Valesky (D-Oneida) and Assemblyman Anthony Brindisi (D-Utica) are the primary sponsors of new legislation (S5966A/A8189A), with support from colleagues on both sides of the aisle, to create an innovative educational path to train students and fill the growing number of high-skill jobs in New York in manufacturing and high-tech fields.⁷⁹

The amendment would create a new pathway to graduation, through a Career and Technical Education (CTE) diploma. The CTE pathway would include the study of career fields such as agriculture, business and marketing, family and consumer sciences, health occupations, trade, technology, manufacturing, machining, and engineering. Students would need to demonstrate their readiness for a career according to regulations of the education commissioner. The Board of Regents would promote the regulations determined by the commissioner to establish the curriculum, assessments, and other criteria to allow students to earn a CTE diploma.⁸⁰

These CTE pathways will help directly address the state's skills gap by producing more workers with the advanced knowledge and skills needed for New York States' technical and manufacturing industries.⁸¹

Say Yes Syracuse

Since 2008, Say Yes Syracuse, a chapter of Say Yes to Education, Inc., has provided research-supported inclusive services and supports to enable children to reach their educational potential through early care and education, mentoring, academic support and family outreach, social and psychological services, and scholarships. These services, including free college tuition to nearly 100 colleges and universities, are available to youth who meet residency, graduation, and admission requirements. Supports begin in kindergarten and continue through high school and into postsecondary education.⁸² Say Yes Syracuse works with public, corporate, non-profit, and philanthropic organizations in the Syracuse area to support the city's students.⁸³

Say Yes Syracuse has shown impressive results in promoting academic interest and growth. More than 5,000 students are enrolled in extended day programs this school year, and almost 3,000 students attended extended year programs during the summer of 2013. These efforts have shown results in the classroom as well: 9th grade dropout rates have declined and more 9th graders passed the algebra Regents exam.

Say Yes Syracuse has also shown strong outcomes in expanding access to postsecondary education, awarding more than \$2.5 million in scholarships in the last three years. More than 2,100 students have used Say Yes support to attend two- or four-year colleges. In the first five years, there was a nearly 33 percent increase in graduates attending college. Students continue to excel in their studies, post-high school, staying in college at a rate above the national average.⁸⁴

postsecondary learning.⁶⁶ In fact, acceptance into at least one college or university is a requirement for graduation.⁶⁷ There are nine Big Picture Schools in New York, including the LaFayette Big Picture School in Onondaga County.⁶⁸

- The New Tech Network (NTN) is a nationwide group of schools working to develop public schools that use innovative ways of teaching and learning to prepare students with the knowledge and skills they need in college and careers.⁶⁹ Students graduating from schools in the New Tech Network have shown impressive results following

Syracuse Innovation Zone - iZone

In an effort to dramatically improve student achievement in Syracuse, the Syracuse City School District (SCSD) and Syracuse Teachers Association (STA) are sponsoring the establishment of the SCSD Innovation Zone (iZone) with the support of the American Federation of Teachers. This effort targets the schools in the district that are struggling most and provides them with new and radical solutions, requiring changes in the school and broader community to best support their students.⁸⁵

Seven Priority Schools were identified by the district as the focus of its reform efforts and will be piloting new, research-based intervention strategies, according to the needs of the school. These strategies include: longer school days for teachers and select support staff; enhanced professional development for teachers; changes to school governance that incorporate shared leadership; new curricula and programming; support from instructional and subject-specific coaches; partnerships with the Achievement Network (ANET) and the Association for Middle Level Education; specialized supports from the school district; expanded leadership to include parents and community members; streamlined processes for dealing with issues of working conditions; and highly qualified teachers.⁸⁶ When strategies are successful, these efforts will be expanded throughout the district. .

the completion of their postsecondary education. Seventy-three percent of graduating students in 2011 enrolled in postsecondary education, a rate 9 percent greater than the national average.⁷⁰ NTN students had higher rates of persistence at both two-year and four-year colleges compared to the national average. On the College and Work Readiness Assessment (CWRA), NTN students had 75 percent more growth in measures of deeper learning between their freshman and senior years, compared to students in the national sample. The NTN seniors also outperformed 77 percent

of college freshmen and 60 percent of other high school seniors when controlling for academic ability.⁷¹

Through these promising models, New York high school students understand the skills they will need in a particular occupation and can make more informed decisions about postsecondary education and training. Whether they go directly into the workforce or pursue advanced education, these students will ultimately enter the workforce much more prepared to hit the ground running, potentially reducing the time and cost of on-the-job training.

Conclusion

New York State—and the Central New York Region—run the risk of falling behind when it comes to preparing the future workforce to compete successfully in a global economy. To meet the future demands of a more skilled and educated workforce, policymakers should invest in what really works and support promising and evidence-based approaches that will ensure young people enter the workforce with the skills New York businesses need. State school districts should be encouraged in fully implementing the New York Common Core Learning Standards and aligned assessments, and the state should grant its school districts greater flexibility to incorporate proven or promising education models using deeper learning into their high schools. If we are serious about securing New York's economic future we must act now to get our businesses the highly-skilled workforce we need to innovate and grow in the global marketplace.

Endnotes

1 *The Nation's Report Card Mathematics 2013 state snapshot report.*

Retrieved from: <http://nces.ed.gov/nationsreportcard/subject/publications/stt2013/pdf/2014465NY8.pdf>; *The Nation's Report Card Reading 2013 state snapshot report.* Retrieved from: <http://nces.ed.gov/nationsreportcard/subject/publications/stt2013/pdf/2014464NY8.pdf>; *The Nation's Report Card Science 2011 state snapshot report.* Retrieved from: <http://nces.ed.gov/nationsreportcard/pdf/stt2011/2012467NY8.pdf>

2 New York State Education Department (2013, June 17).

Press release on cohort graduation rate for 2012. Retrieved from: <http://www.oms.nysed.gov/press/GradRates.2013>.

StatewideHSGradRateStaysAt74PercentDespiteHigherGradStandards.html

3 The University of the State of New York. (2013). Public school district total cohort graduation rate and enrollment outcome summary, 2011-12 school year. Retrieved from: <http://www.p12.nysed.gov/irs/pressRelease/20130617/District-enroll-outcomes-and-diplomas-June172013.pdf>

4 Students are considered "college and career ready" if they graduate in four years with a score of 80 or better on the New York math Regents exam and 75 or better on the English Regents exam. This figure includes only general education (no special education) students who graduated in 2012. English language arts and mathematics aspirational performance measure data; see: <http://www.p12.nysed.gov/irs/pressRelease/20130617/home.html>; The University of the State of New York. (2013). Public school district total cohort aspirational performance measure (APM): 2008 total cohort as of June 2102. Retrieved from: <http://www.p12.nysed.gov/irs/pressRelease/20130617/District-APM-June172013.pdf>

5 ACT (2013). The condition of college and career readiness 2013 New York. Retrieved from: <http://www.act.org/newsroom/data/2013/states/pdf/NewYork.pdf>

6 National Education Association (2014, March). Rankings and estimates. Retrieved from: <http://www.nea.org/assets/docs/NEA-Rankings-and-Estimates-2013-2014.pdf>; <http://www.timesunion.com/local/article/70M-in-remedial-work-for-unprepared-students-2932210.php>

7 American Management Association. (2010). *AMA 2010 critical skills survey*. Executive Summary. Retrieved from: <http://www.p21.org/documents/Critical%20Skills%20Survey%20Executive%20Summary.pdf>

8 American Management Association. (2010). *AMA 2010 critical skills survey*. Executive Summary. Retrieved from: <http://www.p21.org/documents/Critical%20Skills%20Survey%20Executive%20Summary.pdf>

9 Chmura Economics and Analytics. (2013). *Education and occupational analysis for America's Edge: New York*. Custom data analysis. Richmond, VA and Cleveland, OH: Author.

10 Chmura Economics and Analytics. (2013). *Education and occupational analysis for America's Edge: New York*. Custom data analysis. Richmond, VA and Cleveland, OH: Author.

11 Chmura Economics and Analytics. (2013). *Education and occupational analysis for America's Edge: New York*. Custom data analysis. Richmond, VA and Cleveland, OH: Author.

12 Carnevale, A.P., Smith, N. & Strohl, J. (June 2013). *RECOVERY Job growth and education requirements through 2020*. Washington, DC: Georgetown University Center on Education and the Workforce. Retrieved from: <http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/New%20York2020.pdf>

13 Carnevale, A.P., Smith, N. & Strohl, J. (June 2013). *RECOVERY Job growth and education requirements through 2020*. Washington, DC: Georgetown University Center on Education and the Workforce. Retrieved from: <http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/New%20York2020.pdf>

14 Carnevale, A.P., Smith, N., Gulish, A., & Beach, B.H. (June 2012). *Healthcare state report*. Washington, DC: Georgetown University Center on Education and the Workforce. Retrieved from: <http://cew.georgetown.edu/healthcare/>

15 HANYS. (June 2010). *Nurses needed: Short-term relief, ongoing shortage*. Health care Association of New York State. Retrieved from: http://www.hanys.org/workforce/reports/2010-06-07_nurse_survey_results_2010.pdf

16 New York Department of Labor (2013). *Job trends: Central New York*.
17 Chmura Economics and Analytics. (2013). *Education and occupational analysis for America's Edge: New York*. Custom data analysis. Richmond, VA and Cleveland, OH: Author.

18 Carnevale, A.P., Smith, N. & Strohl, J. (June 2013). *RECOVERY Job growth and education requirements through 2020*. Washington, DC: Georgetown University Center on Education and the Workforce. Retrieved from: <http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/New%20York2020.pdf>

19 Carnevale, A.P., Smith, N. & Strohl, J. (June 2013). *RECOVERY Job growth and education requirements through 2020*. Washington, DC: Georgetown University Center on Education and the Workforce. Retrieved from: <http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/New%20York2020.pdf>

20 For population age 25 or older. American Community Survey 2012, S1501, Educational Attainment. One year estimates. Retrieved from: <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>; Carnevale, A.P., Smith, N. & Strohl, J. (June 2013). *RECOVERY Job growth and education requirements through 2020*. Washington, DC: Georgetown University Center on Education and the Workforce. Retrieved from: <http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/New%20York2020.pdf> (9% figure)

21 New York State Department of Labor. (2013, April) *Analysis of New York State's 2010-2020 occupational projections and wages by education level, New York State*. Division of Research and Statistics, Bureau of Labor Market Information. Retrieved from <http://www.labor.state.ny.us/stats/PDFs/Analysis-of-2010-2020-Occupational-Projections-and-Wages.pdf>

22 Carnevale, A.P., Smith, N. & Strohl, J. (June 2013). *RECOVERY*

- Job growth and education requirements through 2020.* Washington, DC: Georgetown University Center on Education and the Workforce. Retrieved from: <http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/New%20York2020.pdf>; Some workers may have postsecondary vocational training that is sufficient for positions like nursing aide positions, which would not be reflected here. For population age 25 or older. American Community Survey 2012, S1501, Educational Attainment. One year estimates. Retrieved from: <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>
- 23** New York State Department of Labor. Long-term occupational employment projections. <http://labor.ny.gov/stats/lspoj.shtm>
- 24** Specifically, 65% of Central New York jobs with employment growth above the regional average of 6.5% and a median annual wage above \$40,000 will require an associate's degree or higher. Calculated using the NY Dept. of Labor data: Long-term occupational employment projections. <http://labor.ny.gov/stats/lspoj.shtm>
- 25** New York State Department of Labor. Long-term occupational employment projections. <http://labor.ny.gov/stats/lspoj.shtm>
- 26** New York State Department of Labor. (December 2010). *The decade in review: New York State's labor markets, 2000-2010*. Albany, NY: Author, Division of Research and Statistics, Bureau of Labor Market Information.
- 27** New York State Department of Labor. Long-term industry employment projections. <http://labor.ny.gov/stats/lspoj.shtm>
- 28** Office of the New York State Comptroller (2009) The changing manufacturing sector in Upstate New York Opportunities for growth. Retrieved from: <http://www.osc.state.ny.us/localgov/pubs/research/manufacturingreport.pdf>
- 29** NY State Department of Labor (2011, January). Significant industries A report to the Workforce Development System Central New York 2011. Retrieved from: <http://labor.ny.gov/stats/PDFs/Significant-Industries-Central-NY.pdf>
- 30** Office of the New York State Comptroller (2009) The changing manufacturing sector in Upstate New York Opportunities for growth. Retrieved from: <http://www.osc.state.ny.us/localgov/pubs/research/manufacturingreport.pdf>
- 31** New York State Department of Labor (2008, September). *Economic report to the workforce system. The labor force grows more mature and becomes more diverse*. Division of Research and Statistics. Retrieved from http://www.doleta.gov/Programs/2007ReportsAndPlans/Economic_Analysis_Reports/NY.pdf; New York State Department of Labor. New York State and county population projections by age and sex. Retrieved from: <http://labor.ny.gov/stats/nys/statewide-population-data.shtm>
- 32** New York State Department of Labor. Long-term occupational employment projections. <http://labor.ny.gov/stats/lspoj.shtm>
- 33** HANYS. (2010, June). *Nurses needed: Short-term relief, ongoing shortage*. Health Care Association of New York State. Retrieved from http://www.hanys.org/workforce/reports/2010-06-07_nurse_survey_results_2010.pdf
- 34** New York State Department of Labor (2008, September). *Economic report to the workforce system. The labor force grows more mature and becomes more diverse*. Division of Research and Statistics. Retrieved from: http://www.doleta.gov/Programs/2007ReportsAndPlans/Economic_Analysis_Reports/NY.pdf
- 35** Organisation for Economic Co-Operation and Development. (2013). *Education at a glance 2013: OECD indicators*. Table A2.3, trends in graduation rates (first-time) at upper secondary level (1995-2011), 26 OECD countries reported high school (upper secondary) graduation rates in 2011. The US ranked 20th. Retrieved from [http://www.oecd.org/edu/eag2013%20\(eng\)--FINAL%2020%20June%202013.pdf](http://www.oecd.org/edu/eag2013%20(eng)--FINAL%2020%20June%202013.pdf)
- 36** Organization for Economic Co-Operation and Development (2013). PISA 2012 results in focus. Retrieved from: <http://www.oecd.org/pisa/keyfindings/pisa-2012-results-overview.pdf>; Organisation for Economic Co-Operation and Development. (2010) *PISA 2009 results: Executive summary*. Retrieved from <http://www.pisa.oecd.org/dataoecd/34/60/46619703.pdf>
- 37** Primary, secondary and postsecondary non-tertiary education spending in OECD countries. Organisation for Economic Co-Operation and Development. (2013). *Education at a glance 2013: OECD indicators*, table B1.2, Retrieved from [http://www.oecd.org/edu/eag2013%20\(eng\)--FINAL%2020%20June%202013.pdf](http://www.oecd.org/edu/eag2013%20(eng)--FINAL%2020%20June%202013.pdf)
- 38** Public education finances 2011. Retrieved from: <http://www2.census.gov/govs/school/11f33pub.pdf>
- 39** Organisation for Economic Co-Operation and Development. (2013). *Education at a glance 2013: OECD indicators*. Table A3.2a, trends in tertiary graduation rates. 25 OECD countries reported tertiary graduation rates in 2011. The US ranked 14th. Retrieved from [http://www.oecd.org/edu/eag2013%20\(eng\)--FINAL%2020%20June%202013.pdf](http://www.oecd.org/edu/eag2013%20(eng)--FINAL%2020%20June%202013.pdf)
- 40** Chmura Economics and Analytics. (2013). *Education and occupational analysis for America's Edge: New York*. Custom data analysis. Richmond, VA and Cleveland, OH: Author.
- 41** Calculated using the NY Dept. of Labor data: Long-term occupational employment projections. <http://labor.ny.gov/stats/lspoj.shtm>
- 42** New York State Department of Labor (2013, November). Careers in STEM Fact sheet Central New York. Retrieved from: <http://labor.ny.gov/stats/PDFs/STEM-Factsheet-Central-NY.pdf>
- 43** Alliance for Excellent Education. (March 2011). *Education and the economy: boosting New York's economy by improving high school graduation rates*. Washington, DC: Author. Retrieved from: http://www.all4ed.org/files/NewYork_seb.pdf
- 44** Alliance for Excellent Education. (November 2011). *The high cost of high school dropouts: What the nation pays for inadequate high schools*. Washington, DC: Author. Retrieved from: <http://www.all4ed.org/files/HighCost.pdf>
- 45** Carnevale, A.P., Smith, N. & Strohl, J. (June 2010). *Help wanted: Projections of jobs and education requirements through 2018*. Washington, DC: Georgetown University Center on Education and the Workforce. Retrieved from: <http://cew.georgetown.edu/jobs2018/>
- 46** "SUNY head seeks 'rational' tuition." Retrieved from: <http://www>

crainsnewyork.com/article/20110310/FREE/110319985

47 Alliance for Excellent Education. (May 2011). *Saving now and saving later: How high school reform can reduce the nation's wasted remediation dollars*. Washington, DC: Author. Retrieved from: <http://www.all4ed.org/files/SavingNowSavingLaterRemediation.pdf>

48 Carnevale, A.P., Smith, N. & Strohl, J. (June 2013). *RECOVERY Job growth and education requirements through 2020*. Washington, DC: Georgetown University Center on Education and the Workforce. Retrieved from: <http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/New%20York2020.pdf>

49 National Research Council. (2012). *Education for life and work: Developing transferrable knowledge and skills in the 21st century*. [Report brief]. Washington DC: The National Academies Press; National Research Council. (2012). *Education for life and work: Developing transferrable knowledge and skills in the 21st century*. James W. Pellegrino and Margaret L. Hilton, Eds., Board on Testing and Assessment and Board on Science Education, Division of Behavioral and Social Sciences and Education. Washington DC: The National Academies Press.

50 This paragraph explaining deeper learning or "21st century skills" is drawn from a National brief: National Research Council. (2012). *Education for life and work: Developing transferrable knowledge and skills in the 21st century*. [Report brief]. Washington DC: The National Academies Press.

51 State Education Department Memo *Implementation of the Common Core Learning Standards*. Retrieved April 30, 2013 from: <http://www.engageny.org/sites/default/files/resource/attachments/field-memo-transition-to-common-core-assessments.pdf>

52 *New York State P-12 Common Core Learning Standards*. <http://www.engageny.org/resource/new-york-state-p-12-common-core-learning-standards>

53 <http://www.parcconline.org/>

54 ConnectEd. (nd). *Linked Learning: frequently asked questions*. Retrieved from: http://www.connectedcalifornia.org/downloads/LL_Frequently_Asked_Questions_web.pdf; Stam, B. (Jan / Feb 2011). The power of real-world application: industry-themed pathways that connect learning with students' interests and career aspirations can transform the high school experience. *Leadership*, pp. 12-15. Retrieved from: <http://www.connectedcalifornia.org/downloads/LeadershipMagLinkedLearning.pdf>

55 <https://www.governor.ny.gov/press/08282013Students-for-High-Skill-Jobs>

56 http://www.syracuse.com/news/index.ssf/2013/09/syracuse_school_district_onondaga_community_college_team_with_manufacturers_on_n.html

57 http://www.syracuse.com/news/index.ssf/2013/09/syracuse_school_district_onondaga_community_college_team_with_manufacturers_on_n.html

58 http://www.syracuse.com/news/index.ssf/2013/09/syracuse_school_district_onondaga_community_college_team_with_manufacturers_on_n.html

on_n.html

59 Hoachlander, G., & Yanofsky, D. (March 2011). Making STEM Real. *Educational Leadership*, vol. 68, no. 6, pp. 1-6. Retrieved from: <http://www.connectedcalifornia.org/downloads/MakingSTEMReal-EdLeadershipMagazine2011.pdf>

60 Hoachlander, G., & Yanofsky, D. (March 2011). Making STEM Real. *Educational Leadership*, vol. 68, no. 6, pp. 1-6. Retrieved from: <http://www.connectedcalifornia.org/downloads/MakingSTEMReal-EdLeadershipMagazine2011.pdf>

61 Stam, B. (Jan / Feb 2011). The power of real-world application: industry-themed pathways that connect learning with students' interests and career aspirations can transform the high school experience. *Leadership*, pp. 12-15. Retrieved from: <http://www.connectedcalifornia.org/downloads/LeadershipMagLinkedLearning.pdf>

62 Kemple, J. J., & Willner, C.J. (July 2008). *Technical resources for "Career Academies: Long-term impacts on labor market outcomes, educational attainment, and transitions to adulthood."* MDRC. Retrieved from: <http://www.mdrc.org/publications/482/techresources.pdf>

63 Kemple, J.J., & Willner, C.J. (2008). *Career Academies: Long-term impacts on labor market outcomes, educational attainment, and transitions to adulthood*. New York: MDRC.

64 Big Picture Learning. (2013). *Big Picture Schools*. Providence, RI: Big Picture Learning. Retrieved from: <http://www.bigpicture.org/schools/>; Big Picture Learning. (2012). *Big Picture Learning: High School Alumni Report*. Berkeley, CA: MPR Associates, Inc. Retrieved from: http://www.bigpicture.org/wp-content/uploads/2013/05/BPL-Report-Final-Jan-2013_2.28.13.pdf

65 Lafayette Big Picture. (2013). *What is the Big Picture?* LaFayette, NY: LaFayette Big Picture. Retrieved from: <https://sites.google.com/site/lafayettebigpicture/what-is-the-big-picture>

66 <http://www.bigpicture.org/2008/12/dream-education-big-picture-school-lets-students-design-own-program/#sthash.n3CnAMSE.dpuf>

67 <http://news.google.com/newspapers?nid=1955&dat=20081217&id=iPguAAAIBAJ&sjid=YqIFAAAAIBAJ&pg=2080,589028>

68 www.bigpicture.org

69 <http://www.newtechnetwork.org/about/about-us>

70 http://www.newtechnetwork.org/sites/default/files/news/2013_annual_data_v14-01.pdf

71 p.8 http://www.newtechnetwork.org/sites/default/files/news/2013_annual_data_v14-01.pdf

72 <http://www.lafayetteschools.org/teacherpage.cfm?teacher=1141> ; <http://www.bigpicture.org/schools/#sthash.zSbFYvf9.dpuf>

73 p.8 <http://www.lafayetteschools.org/tfiles/folder559/Big%20Picture-Cohen%20Report%203.13.2014.pdf>

74 p.6 <http://www.lafayetteschools.org/tfiles/folder559/Big%20Picture-Cohen%20Report%203.13.2014.pdf>

75 <http://news.google.com/newspapers?nid=1955&dat=20081217&id=iPguAAAIBAJ&sjid=YqIFAAAAIBAJ&pg=2080,589028>

76 p.3 <http://www.lafayetteschools.org/tfiles/folder559/Big%20Picture-Cohen%20Report%203.13.2014.pdf>

Cohen%20Report%203.13.2014.pdf

77 http://www.syracuse.com/news/index.ssf/2014/03/new_school_ocm_boces_new_tech_innovation_tech.html

78 http://www.syracuse.com/news/index.ssf/2014/03/new_school_ocm_boces_new_tech_innovation_tech.html

79 <http://www.nysenate.gov/press-release/senator-valesky-assemblyman-brindisi-promote-legislation-address-skills-gap-through-ne>

80 <http://open.nysenate.gov/legislation/bill/A8189-2013>

81 <http://open.nysenate.gov/legislation/bill/A8189-2013>

82 <http://syracuse.sayyestoeducation.org/about-us/mission-and-approach>

83 <http://www.sayyestoeducation.org/chapter/syracuse>

84 <http://syracuse.sayyestoeducation.org/sites/default/files/resources/SayYes5YearResults06.pdf>

85 <http://scsdizone.wix.com/scsdizone>

86 http://scsdizone.wix.com/scsdizone#!about_us/csgz



NEW YORK OFFICE
3 Columbia Place, Floor 2
Albany, NY 12207

Jenn O'Connor,
State Director
(518) 396-5774

joconnor@americasedge.org

Tamaé Memole,
Associate Director
(518) 396-5775

tmemole@americasedge.org

STATE OFFICES

California

Jennifer Ortega, State Director
211 Sutter Street, Suite 401
San Francisco, CA 94108
(415) 762-8275

jortega@americasedge.org

Illinois

Tim Carpenter, State Director
70 E. Lake Street
Chicago, IL 60601
(312) 962-4850

tcarpenter@americasedge.org

Maine

Kim Gore, State Director
4 Jersey Circle
Topsham, ME 04086
(207) 725-7238

kgore@americasedge.org

Michigan

K.P. Pelleran, State Director
Boji Tower, Suite 1220
124 W. Allegan Street
Lansing, MI 48933
(517) 803-2463

kpelleran@americasedge.org

Oregon

Martha Brooks, Western State Dir.
17675 SW Farmington Rd,
PMB#336
Beaverton, OR 97007
(503) 649-2068

mbrooks@americasedge.org

Washington

Steven Leahy, State Director
21015 NE 36th Street
Sammamish, WA 98074
(206) 790-3138

sleahy@americasedge.org

Wyoming

Martha Brooks, Western State Dir.
17675 SW Farmington Rd,
PMB#336
Beaverton, OR 97007
(503) 649-2068

mbrooks@americasedge.org