



**CAEL**  
Linking Learning and Work

# From High School to Career: A Strategy to Weather Talent's Perfect Storm

*Employers are facing a critical talent shortage  
– it's the "perfect storm"*



A report on exemplary high school-to-career programs by  
The Council for Adult and Experiential Learning

2012

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## Introduction



*For many employers the storm is already here; for others, it's just on the horizon. Even though the unemployment rate still hovers around 8% nationwide, the evidence is clear:*

- A 2012 **Manpower staffing survey** of 38,000 employers found that in the United States alone, 49% of employers were unable to fill targeted jobs<sup>1</sup>.
- **The Economist** predicts that by 2020 there will be 123 million high-skill, high-paying jobs available in the United States and only 50 million Americans with the right education to fill them<sup>2</sup>.
- **"Help Wanted: Projections of Jobs and Education Requirements Through 2018,"** a 2010 study from the Georgetown University Center on Education and the Workforce, predicts that employers will need 22 million workers with postsecondary degrees by 2018 and will be short a minimum of 3 million of those workers<sup>3</sup>.

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<sup>1</sup> Manpower Group, "2012 Talent Shortage Survey," May 2012, retrieved from [manpowergroup.com/research/research.cfm](http://manpowergroup.com/research/research.cfm) on June 4, 2012.

<sup>2</sup> Economist Intelligence Unit, "To the 'three R's' add one more: Writhing," April 6, 2011, retrieved from [eiu.com](http://eiu.com) on June 6, 2012.

<sup>3</sup> Carnevale, Anthony P., Nicole Smith, and Jeff Strohl, "Help Wanted: Projections of Jobs and Education Requirements Through 2018," Georgetown University Center on Education and the Workforce, June 15, 2010, retrieved from [cew.georgetown.edu/jobs2018](http://cew.georgetown.edu/jobs2018) on June 4, 2012.

## Analyzing the Storm

**Much as a meteorologist tracks weather patterns, employers must track the diverse, but very clear trends that are contributing to this storm. Consider these indicators:**

1. The retirement bubble is real. The economic downturn has delayed the retirement plans of many baby boomers, but this delay is only temporary. Boomers can't and won't work forever, and their departure will leave large talent gaps in the workforce<sup>4</sup>.
2. The national high school dropout rate hovers at a very stubborn 30%. High school students need and want examples of how curriculum applies and is relevant to a career<sup>5</sup>.
3. An astonishing 40% of the 70% of students who graduate from high school need remediation when they enter college, and 60% who enter a community college need remediation<sup>6</sup>.
4. Public sector colleges and universities are bursting at the seams and facing severe funding cutbacks, making them less able to prepare the students that will be needed in the workforce.
5. "Entry level" is actually a high bar to reach in many industry sectors. A high school diploma served as the entry-level credential as recently as five years ago, but it no longer does. Today, for many jobs, particularly those that require Science-Technology-Engineering-Math (STEM) preparation, a high school diploma is not enough. Now "entry level" requires a high school diploma plus; the "plus" can be additional certification, an associate's degree, an apprenticeship, an internship, or some combination of the four, but it needs to be something more than the high school diploma.
6. There is increased competition among industry sectors, particularly among STEM employers, for the same employee. Telecommunications, energy, healthcare, manufacturing, and IT are all reaching into high schools (and even into middle schools) to promote their industries and to convince students (and their parents) to take a closer look.
7. Employer training budgets are continually squeezed, resulting in less ability among employers to provide training to an entry level workforce in the way that might have happened as recently as 5 years ago.

*The message is clear:*

*If you are an employer, and you are not creating or supporting a viable talent pipeline, your business is at risk.*

<sup>4</sup>Toossi, Mitra "Labor Force Projections to 2018: Older Workers Staying More Active," Monthly Labor Review, Bureau of Labor Statistics, November 2009, retrieved from [bls.gov/opub/mlr/2009/11/art3exc.htm](http://bls.gov/opub/mlr/2009/11/art3exc.htm) on June 5, 2012.

<sup>5</sup>Education Week and the Editorial Projects in Education Research Center, "Diplomas Count 2011: Beyond High School, Before Baccalaureate—Meaningful Alternatives to a Four-Year Degree," retrieved from [edweek.org/ew/toc/2011/06/09/index.html?intc=EW-DC11-EM](http://edweek.org/ew/toc/2011/06/09/index.html?intc=EW-DC11-EM) on June 5, 2012.

<sup>6</sup>Reyna, Ryan, "Complete to Compete: Common College Completion Metrics," National Governors Association, June 2010, retrieved from [subnet.nga.org/ci/1011/resources.htm](http://subnet.nga.org/ci/1011/resources.htm) on June 5, 2012.

## **Taking Action: The High School-to-Career Model**



*Across the country, businesses are partnering with high schools and colleges to build programs that develop the skills needed for employment within their own industry. Each of these initiatives results in prepared students contributing to a prepared workforce, which contributes to the growth and economic security of their communities.*

- In Berkeley, California, Bayer Healthcare joined forces with the educational system to immerse students in bioscience studies and bring diversity to the healthcare industry.
- In San Antonio, Texas, area companies such as Lockheed Martin, Boeing, Kelly Aviation, and Randolph Air Force Base collaborated with the school district and nearby colleges to re-introduce the aerospace industry through the Alamo Area Aerospace Academy.
- In Ft. Meyers, Florida, The Academy for Technology Excellence relies on a curriculum developed through consultation with Microsoft, and offers 18 industry-recognized computer certifications to low-income students.

These are just a few examples of the innovative "school-to-career channels" created across the country to excite young students and prepare them to successfully join the workforce of tomorrow.

# The CAEL High School Model

## *Light Up Your Future*

For many years The Council for Adult and Experiential Learning (CAEL) has pioneered new and innovative learning solutions to develop the entry and mid-level workforce. Beginning in 2007, CAEL created and piloted a high school-to-career model, *Light Up Your Future*, with and for the energy industry.



The CAEL model is implemented at a local level and is built on a partnership with The Energy Providers Coalition for Education (EPCE, [www.epceonline.org](http://www.epceonline.org)), The Virtual High School Global Consortium, Bismarck State College, a local utility employer, and local high schools. EPCE subject matter experts oversee curriculum development. The Virtual High School Global Consortium offers high school online courses

that have been customized and contextualized by and for the energy industry; Bismarck State College offers college online energy courses, and CAEL manages the project and facilitates the local utility's career connection activities.

### The program goals are:

- Increase students' academic preparedness for careers in the electric utility industry
- Increase the pool of career-ready technical high school students
- Increase the number of technical high school students ready for advanced careers in the electrical industry through college-level curriculum education

After the first project roll out in 2007, CAEL expanded the model to include employers in various locations. As of today, the *Light Up Your Future* model has been successfully implemented with five energy employers in eleven high schools in the following areas:

- Oklahoma Gas & Electric, Arkansas and Oklahoma
- Xcel Energy, Colorado
- Connecticut Light and Power, subsidiary of Northeast Utilities, Connecticut
- Western Massachusetts Electric Company, subsidiary of Northeast Utilities, Massachusetts



In each of these locations, small cohorts of selected students enroll in the ***Light Up Your Future*** program from various employer locations, including rural and urban areas. Many of the students come from economically disadvantaged backgrounds and have never taken an online course or have had the opportunity to participate in an internship.

The online courses combine career awareness and STEM concepts applied in real-world energy industry assignments.

Students are able to connect their online, energy specific learning with a paid summer internship between 11<sup>th</sup> and 12<sup>th</sup> grade, which for most students is their first job experience. Students are prepared for energy industry entrance exams, and upon passing, qualify for employment. After employment, students are given the opportunity to enroll in electric power technology courses and earn college credit hours, at no cost to the students.

**In evaluating the benefits of *Light Up Your Future*, company supervisors who participated in the program were clear about the long and short term benefits of the program for the sponsoring employer. These included:**

### ***Short-term benefits of the Light Up Your Future program:***

- Increased productivity. High school students are motivated. They are new, fresh, and out to prove themselves. They commit to tasks and work hard to complete them quickly and efficiently. They are able to work on a variety of projects with enthusiasm.
- An excellent recruitment tool. Internships are a great way to bring in employees. Student internships offer a trial period in which the employer is able to assess the skills and abilities of an intern without the commitment of a full-time employee. A new hire with relevant internship experience is better prepared than those without internship experience.
- A way of establishing critical relationships. Employers want to connect with high schools; this program provides the opportunity to connect with students and build relationships to foster both their academic and work careers.
- An increase in training and educational opportunities. Students bring with them the knowledge and skills learned through school. They have been exposed and introduced to industry-related STEM education, which builds future career and technical skills in youth.

***Long-term benefits of the Light Up Your Future program:***

- Growing the pipeline of potential employees. Students participating in the program can be the future of the company. There is strong likelihood that a successful high school student will become a successful employee.
- Molding and shaping skill sets. Students participating in the program are open and ready to learn. High school-to-career programs give the employer the opportunity to mold and shape the skills the company seeks.
- Retaining qualified talent. Students hired after internships are more likely to stay with the company for a longer time. In addition, students who become entry level employees already possess many of the required skills.
- Reducing recruitment costs and risks. An available pool of students will decrease the costs associated with recruiting new employees. Staff is already familiar with the quality and history of the student, which reduces the possible risks associated with hiring unknown recruits.
- Fostering life-changing opportunities and experiences. The high school-to-career program can become a life-changing experience for students. It happens at a pivotal time, allowing students to gain work experience and career exploration, enhancing their choices for the future.

*"I don't think there is any better way for Northeast Utilities to attract and develop the next generation of new young workers." Ken Garber, Account Executive at Northeast Utilities*

## Branching Out

As CAEL became immersed in the high school-to-career initiative built for the energy industry, a number of mature and robust high school-to-career programs, particularly focused on STEM curricula and STEM jobs, surfaced. These programs are robust, mature, and each demonstrates outstanding results. As CAEL began to look more deeply into each of these programs, we found a rich source of "best practices."

In 2011 CAEL studied six successful high school-to-career initiatives. This report contains the findings from that study. It can be used as a primer for employers and educators who want to develop a high quality and sustainable workforce.

Each program included in this report relies on ongoing collaboration between employers and educational institutions, including both high schools and colleges. Each engages young students, immersing them simultaneously in education and real-life work experiences. In each successful program, students from all backgrounds thrive and achieve graduation rates well above the national average, then move on to jobs that utilize their skills and training. By creating school-to-career channels, both employers and schools play a critical role in shaping tomorrow's workforce.

## Let's get started!

### A Career Pathway



*Successful high school to career partnerships between schools and businesses are built on a **career pathway**. A career pathway visually demonstrates jobs and skills, coupled with requisite education and training.*

For high school students, the pathway must be presented in a format that is fun, user friendly, and interactive. A successful career pathway is led by employers, but requires schools and employers to work together to establish educational criteria, which will meet the demands of both the school and the industry. Career pathways succeed by informing students of the precise steps they need to take and the skills they must learn in order to obtain a job, providing a clear map from school to employment.

Career pathways align with federally designated career clusters, which work to advance learning surrounding particular subjects. The U.S. Department of Education outlines 16 career clusters, and one cluster in particular—the Science, Technology, Engineering, and Math (STEM) career cluster—is urgently needed. Many states are taking steps to improve STEM education, including school-to-industry programs.

**According to the U.S. Chamber of Commerce, such programs are successful in strengthening the targeted industry, or channel to that industry in the following ways:**

- More high school students enroll in STEM-related courses.
- More students graduate from high school.
- Enrollments in "receiving" postsecondary programs grow as more students make the transition from secondary to postsecondary education.
- Students earn higher scores on standardized academic and career and technical tests.
- High school students are better prepared to make informed career choices.
- Employers gain a larger pool of qualified workers.

Career pathways and successful school-to-career programs are integral to advancing students into the fields most in need of qualified workers. This idea is nothing new. In fact, for many years schools across the country have been collaborating with industry and governmental partners to create successful programs that link education to careers.

**In studying the most successful programs, CAEL identified these common characteristics shared by leading models:**

- Clearly established goal, purpose and career map
- Employer engagement
- Curriculum developed through collaboration
- Students grouped by cohort
- Mentorship
- Hands-on learning experiences, including internships
- Professional development/industry-based training
- Continuous assessment and adaptability of the program
- Multi-year program sustainability
- Alignment to industry competency models

## Leading by Example

CAEL is pleased to introduce some of the most successful high school-to-career programs in the country.

### Training for Tomorrow

*The Advanced Technology Academy at West Mesa High School  
Albuquerque, New Mexico*



**Albuquerque, New Mexico** has a strong labor market for manufacturing and laser and photonics technicians. In recent years, the demand has grown in response to industry growth, but an aging workforce has presented a challenge. Attempts to recruit out-of-state workers failed. To address the challenges, West Mesa High School began working with Sandia National Laboratories, Central New Mexico Community College, and the University of New Mexico to create The Advanced Technology Academy, which consists of the Advanced Manufacturing Academy, created in 1996, and the Advanced Photonics Academy, created in 2002.

Many of the students enrolled in the Academy come from economically disadvantaged backgrounds and will be the first in their families to complete any higher education. The program has had tremendous success keeping students engaged in their studies. The career pathway involves a six- to eight-year channel from early high school to an associate's degree and beyond. The Academy lays a solid foundation in math and science, while also teaching students practical workplace skills. Throughout the program, students complete internships with Sandia, and have the option of dual enrollment with Central New Mexico Community College, where they can earn college credit without paying tuition. In 2006, enrollment was at nearly 200 students, with a retention rate greater than 90% and a 95% graduation rate. After graduation, Sandia hires many students, reducing the need for extensive new-employee training.

*The first of its kind in the nation, the Academy model has been replicated at Albuquerque High School, and has been endorsed by the National Council for Advanced Manufacturing (NACFAM) as a best-practice model for workforce skills development.*

## A Collaborative Solution

*Alamo Area Aerospace Academy*

*San Antonio, Texas*



In early 2000, **aerospace** was seen as a dying industry in San Antonio, Texas. The city was faced with an aging workforce, military base closures, and an increasing tendency for the government to outsource aerospace jobs. A solution was needed that would connect high schools to area industries, while also giving youth an incentive to remain in and around San Antonio. In 2001, the Alamo Area Aerospace Academy (AAAA) was created to do just that. One of four Alamo Area Academies, the community-based program is run by the city of San Antonio, as well as a collaboration of businesses (Lockheed Martin, Boeing, Kelly Aviation, and Randolph Air Force Base), along with local universities and school districts, Workforce Solutions Alamo, the Greater San Antonio Chamber of Commerce, the San Antonio Manufacturers Association, and others. It offers dual high school and community college credit, at no cost to students.

The students, most of whom are Hispanic and from low-income backgrounds, are grouped in cohorts and spend half the day in high school and the other half on the campuses of Alamo colleges, where they are trained for careers in aerospace maintenance, and learn skills such as airframe and power plant mechanics. The challenging curriculum is in full alignment with the requirements of the Federal Aviation Agency (FAA). Throughout the program, industry partners remain invested in the success of each student. Students participate in fully paid summer internships between 11<sup>th</sup> and 12<sup>th</sup> grade, and successful interns receive hiring preference upon graduation. Graduates also receive industry certification and OSHA-recognized safety training. They are presented the option of continuing their postsecondary education, including participation in the Lockheed Martin Apprenticeship Training Program.

Since 2002, 280 students have graduated AAAA, with 181 entering the targeted field and 72 pursuing higher education. Most industry partners offer tuition reimbursement programs for graduates who wish to continue their education upon hiring. Currently, Lockheed Martin has 70 full-time employees from the program and Boeing has 40. Despite budget cuts to education, enrollment in the four academies has grown every year since 2007.

*In San Antonio, approximately 16% of Lockheed Martin's workforce is hired directly from the Alamo Area Aerospace Academy.*



## Bringing Diversity to Science and Healthcare

*Biotech Academy*

*Berkeley, California*

In 1993, concerns arose in Berkeley, California that minority youth were not on a college-prep track. To address the issue, Bayer Healthcare and the city of Berkeley came together to create **Biotech Academy**, a multi-year program focused on biosciences and health care. The goal of Biotech Academy was to devise a channel from high school to postsecondary school that would introduce youth from populations underrepresented in the sciences to training and, eventually, careers in bioscience. The program has done just that. Today, nearly all of the participating students are racially diverse, and more than half are female. Many come from low-income households and speak English as a second language.

The program, which began at Berkeley High School and expanded to Oakland Technical High School in 2008, immerses students in a specialized science and technology curriculum, introducing them to industry members who serve as mentors. Participants have paid internship and employment opportunities with Novartis, U.S. Environmental Protection Agency, U.S. Department of Agriculture, Lawrence Berkeley National Laboratory, Genentech, and other employers.

In recent years, the program has seen a 100% graduation rate, compared to the overall state high school graduation rate of 68%. Participating students in the community college program have a 59% completion rate, which is nearly double the national completion rate. Moreover, 100% of graduates seeking work in biotechnology have found and retained full-time employment, usually within 30 days of graduation.

*The program's success has garnered attention from *The New York Times*, *NBC Nightly News* and appeared in numerous reports on urban youth education and workforce development.*

## Energizing the Energy Field

*Gulf Power Academy*

*Pensacola, Florida*



In 2000, **Gulf Power** recognized the need for additional workers and training in Florida's energy industry. To maximize its training budget while also filling jobs, Gulf Power started the Gulf Power Training Academy (GPA) in 2001 at the West Florida High School of Advanced Technology in Pensacola. The academy, which admits 25 students each year, works to introduce residents to the field of energy at an early age. Students apply to GPA in eighth grade, and admission is determined via a lottery system.

With a curriculum based on the National Center for Construction Education and Research core and electrical curriculum, students earn college credit hours, complete a required pre-employment test (with a 98% success rate), receive hands-on and industry-based instruction, work internships, partner with mentors, and graduate with industry-recognized credentials.

GPA retains 100% of its students, and 50% of graduates pursue postsecondary education, with 50% of those entering engineering programs. Of the 50% who do not pursue postsecondary education, 25 to 30% immediately go to work for Gulf Power.

The Gulf Power/GPA partnership was the first energy academy in the United States rated as "exemplary" by the Association of Career and Technical Education under the Small Learning Community model. The program has been replicated more than 20 times.

*Prior to Gulf Power Training Academy, the pass rate on industry pre-employment tests was approximately 50%. Academy students currently have a 98% pass rate.*

## Fast-Tracking Healthcare Careers

*Penn Medicine High School Pipeline Program*

*Philadelphia, Pennsylvania*



As the largest employer in Philadelphia, Penn Medicine wanted to partner with the community and make an impact in health care, education, and employment. Teaming up with the Philadelphia Youth Network, Community College of Philadelphia, the University City District, and three West Philadelphia high schools, they created Penn Medicine High School Pipeline Program, which enables high school students to fast-track entry into schools of nursing and health by taking community college classes during high school.

The program serves inner-city students from underprivileged and lower socio-economic backgrounds, and students can choose among nursing, allied health care, or nonclinical healthcare tracks, which focus on areas such as finance and patient services. Starting their junior year, students take high school courses in the morning and then alternate working at a Penn Medicine facility and taking community college classes in the afternoon.

Upon graduation, there are incentives to continue learning: those who enroll in at least two community college classes per term work 20 hours per week at Penn Medicine but receive pay for 40 hours per week. In addition, Penn Medicine offers employees a pre-paid tuition assistance program, so that they can complete their education at no cost.

*“The ultimate goal is to help (them) get their degrees and then come to work for us.”*

*— Theresa Simmons, High School Program Consultant, Penn Medicine High School Pipeline Program*



In the early part of 2000, Dunbar High School in Ft. Myers, Florida was struggling. The school was experiencing a decline in enrollment, low academic achievement, minority group isolation and poor perception in the community. At the same time, the local business community was in need of workers with technical skills. In 2005, Dunbar partnered with businesses such as Microsoft, Chico's, First Community Bank of Southwest Florida, and other employers to create The Academy for Technology Excellence, a magnet school with an enrollment of 850 students. The curriculum was developed through consultation with Microsoft and is also aligned with CompTIA and Adobe.

ATE trains students, 85% of whom come from lower socio-economic households, in network systems and information support and services pathways, offering 18 industry-recognized computer certifications, along with paid internship opportunities. Students can earn dual credit for their coursework, and have the potential to earn up to 48 postsecondary credits upon graduation.

The results have been remarkable: nearly 95% of the students enrolled in ATE for four years graduate high school, and 85% of graduates have gone on to college or joined the military. In just six years since the academy began, students have received 1,675 certifications. Students who graduate with at least one certification are then eligible for entry-level IT positions offering annual salaries of \$35,000 to \$50,000.

*Since opening, ATE has expanded to encompass three academies, including the Academy for Digital Excellence and an Adobe game design and programming academy. In 2008, Microsoft named Dunbar's ATE the first Microsoft-certified high school in the world, and Magnet Schools of America named the Academy a Magnet School of Distinction.*

## What can we learn?

**In comparing the success of each of these six initiatives, CAEL makes these recommendations to begin a program of your own:**

- Train and deploy ambassadors to recruit at a local high school. Word-of-mouth from current employees is one of the best forms of marketing. They can dispel myths and promote the pros of the industry and company.
- Align STEM education with industry-related education. Combine industry career awareness and STEM concepts to encourage students to become proficient in STEM concepts and excite them about industry career opportunities.
- Align funding with likeminded businesses. Work together to make your resources go even further.
- Commit resources to support curriculum development, marketing and promotion, and distribution of training equipment to the education partners.
- Create high school-level internship opportunities. Experiential learning motivates students to learn more, remain within the industry, and explore industry sectors they may not have been aware of.
- Provide local schools with supplementary funding and equipment to help create hands-on learning experiences within the middle and high school levels. Often schools lack the resources needed to develop new programs. Your generosity could benefit the school as well as your own business.
- Conduct outreach efforts that will target students at an early age. Education and exposure to direct career interests impacts a student's future pathway. By starting to work with them in elementary school you could be opening their eyes to a new industry and building your own workforce.
- Create community outreach efforts. Educate the community about your industry. One way to do this is through workplace tours for parents of potential academy students.

## Start Now



*There is a perfect talent storm bearing down on the United States. To disregard this storm is much like ignoring a tornado, and results in equally disastrous consequences. The good news for employers, however, is that your company doesn't need to be at risk. There are solutions available, solutions that have been tested and proven to be effective, and the high school-to-career models highlighted in this paper are just the beginning.*

***Start smart,  
But start now!***

## About CAEL



- The Council for Adult and Experiential Learning (CAEL) is a national non-profit, founded in 1974 to focus on adult learning and workforce development.
- CAEL has more than 700 college and university members, all dedicated to removing barriers for adult students.
- CAEL has developed innovative solutions to "Link Learning and Work," and delivers these to large and small employers nationwide.
- CAEL is a nationally recognized "intermediary" with the ability to convene diverse stakeholders, including employers, schools, and economic development organizations, to build solutions to create stronger workforces and stronger communities.

For more information contact [Employerservices@cael.org](mailto:Employerservices@cael.org).

