

# 2011 SURVEY OF CONNECTICUT'S MANUFACTURING WORKFORCE

## Introduction

With a median age now over 40 years, Connecticut's manufacturing workforce is at a critical juncture. The manufacturing sector is and will be experiencing the effects of an aging population in its workforce. Our 2011 Survey of Connecticut Manufacturers identifies the positions most difficult to fill while examining what skills are needed for the future. Manufacturers are generally satisfied with the graduates they hire, but many find workers hired for entry-level positions are lacking certain basic skills. Overall, the findings depict key challenges among workers that underscore the need to ensure an adequate and available workforce. Because the manufacturing sector is such a vital component of the Connecticut economy, businesses, policy leaders, and educators must work together to help create the next generation of manufacturing employees in the state.

## Education & Certification

When asked from which educational institutions they usually hire their employees, 51% of respondents indicated they

**“ Our 2011 survey of Connecticut manufacturers underscores the value higher education is providing in preparing the 21st century workforce in Connecticut. At the community college level, the satisfaction levels rival that of our four-year institutions. Our goal remains to continue engaging and motivating the next generation of workers to pursue careers in manufacturing while ensuring they have the skill sets needed to be successful.”**

**Dr. Karen Wosczyzna-Birch**

Executive Director, Connecticut Community Colleges'  
College of Technology, Regional Center for Next Generation  
Manufacturing

hired graduates from Connecticut technical high schools, and 44% from traditional high schools. Over 30% also reported they hired from community colleges (both certificate — 33% and associates degree programs — 32%) as well as from the

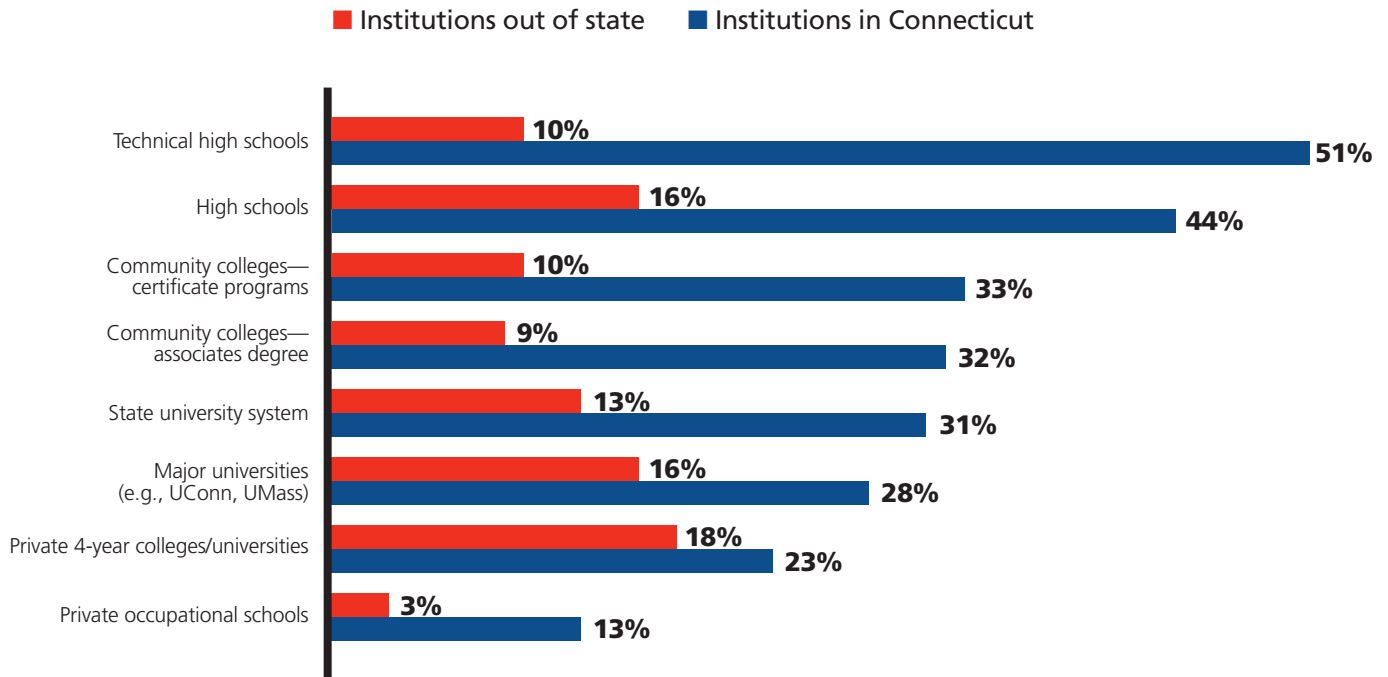
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## WHERE ARE CONNECTICUT MANUFACTURERS FINDING WORKERS?



state university system (31%). Hiring outside of Connecticut is much less common, with the highest reported institutions being private four-year colleges/universities (18%), followed by other major universities and high schools (16% reporting

hiring from these locations each), and other states' university systems (13%).

Satisfaction with graduates of traditional versus technical high schools varies considerably, with 61% of manufacturers satisfied or highly satisfied with technical high school graduates compared to only 28% satisfied with traditional high school graduates. Four-year private colleges and universities received the highest satisfaction levels, with 80% of manufacturers reporting they are either satisfied or highly satisfied, followed by the state university system (78%), private occupational schools (77%), community colleges (associates degree 76%, certificate programs, 71%) and major universities (74%).

Overall, higher education is delivering graduates who are meeting the needs of the state's manufacturers. With little difference in satisfaction levels between community colleges and four-year institutions, the results underscore that the efforts made among all levels of higher education to meet the workforce needs of manufacturers have had an impact.

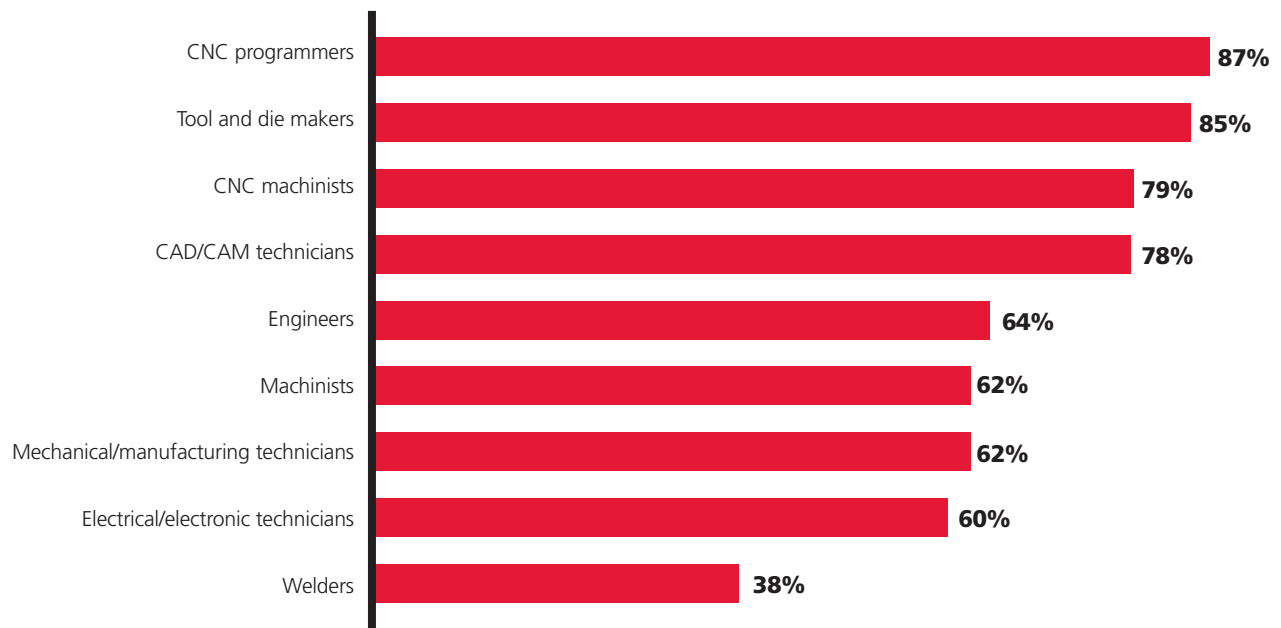
Of those manufacturers that have hired from community colleges, 38% said internships/on-the-job training could improve community college graduates' job readiness; 33%

**“ Payroll remains the largest cost of doing business for American manufacturers, making it imperative that our workforces are the most capable and highly skilled in the world. The quality of our workforce is what sets us apart from the competition, and successful manufacturers will continue to enjoy the benefits of workforce reinvestment.**

**As global labor costs rise, it only underscores the need to reinforce the talent and benefit companies will realize from working with American companies instead of going overseas.”**

**James F. Kask, CPA**  
Partner, J.H. Cohn LLP

### RATED MOST DIFFICULT POSITIONS TO FILL



suggested additional employability skills (punctuality, professionalism, etc.); and 20% wanted improvement in basic skills such as math and reading. Only 3% of respondents identified more and higher-level technical skills training as an area for improvement, suggesting that this is an area where community colleges excel.

Respondents expressed satisfaction with the quality of graduates from most institutions and a willingness to facilitate their employees' education through tuition reimbursement (65% of respondents). They also admitted to being unfamiliar with many national certifications or credentials offered by manufacturing-related and learning organizations.

This indicates a need to better educate both employers and students about the value and significance of industry credentials. Ninety-two percent of manufacturers surveyed are not familiar with the ACT National Career Readiness Certificate; 82% are unfamiliar with Manufacturing Skills Standards Council (MSSC) certification; 72% are unfamiliar with American Welding Society (AWS) certification; and 66% are unfamiliar with National Institute for Metalworking Skills (NIMS) credentialing. Respondents were most familiar with the Society of Manufacturing Engineers (SME) credentials (73%).

The fact that 56% of respondents would give preference to a job candidate with nationally recognized certifications or credentials while only 18% report that their company uses such credentials in their hiring procedures also suggests a major shortage of job candidates with these credentials.

### Recruitment & Skills

On average, respondents expect their workforce to grow by 3% in 2011, by 4.3% in 2012, by 5.4% in 2013-2014, and by 5.9% in 2015-2016. When asked more specifically about hiring during those periods, 30% plan to hire full-time employees by the end of 2011, 6% plan to hire part-time employees, and 13% plan to hire temporary workers. The hiring trend continues with 33% expecting to hire full-time staff by the end of 2012 and 35% expecting to do so by the end of 2014. These job numbers prove very promising for what otherwise continues to be a slow economic recovery in the state. The strength of the manufacturing sector, due in part to surging exports, will hinge upon a pipeline of well-qualified workers to fill positions as they become available.

**“An educated and skilled workforce is the most important component for driving innovation in the advanced manufacturing sector. Recruiting and hiring workers who possess nationally portable, industry-recognized credentials gives companies confidence that they are making a sound investment in their workforce.”**

**Emily DeRocco**

President, Manufacturing Institute, National Association of Manufacturers (NAM)

Indeed, Connecticut manufacturers expressed concerns about finding and attracting skilled labor. The top five most difficult positions to fill were CNC programmers (87%), tool and die makers (85%), CNC machinists (79%), CAD/CAM technicians (78%), and engineers (64%). The top technical skills employees need in order for their companies to remain competitive are critical thinking/problem solving (cited by 40%) and blueprint reading (also 40%), quality assurance (39%), CNC machining (32%), CNC programming (30%), and CAD/CAM (27%). Though these skills are critical to employee and company success, the vast majority of companies do not

offer training in these areas. Of the training offered, the top five subjects were:

- ▶ Blueprint reading – 23%
- ▶ CNC machining – 22%
- ▶ Quality – 21%
- ▶ Occupational health and safety – 19%
- ▶ CNC programming – 17%

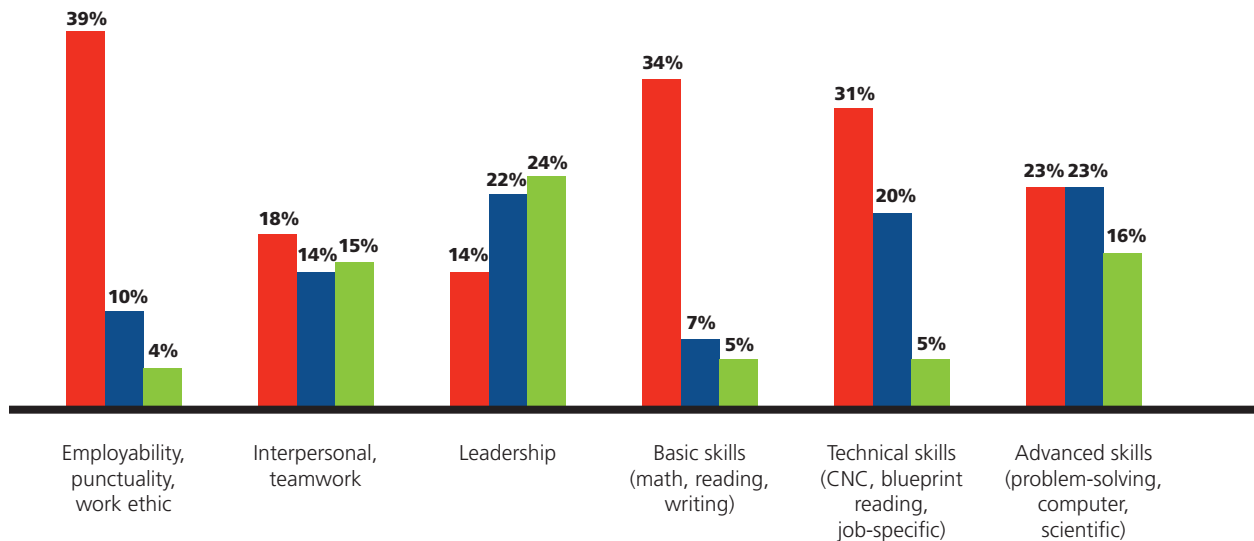
When it comes to the skill sets of existing employees, 39% of respondents said entry-level employees lacked employability skills such as punctuality and work ethic, while another 34% cited a lack of basic skills such as math and reading. An additional 31% reported a lack of technical skills, and 23% cited advanced skills (problem-solving, scientific, and computer) as most deficient among their entry-level workers.

Manufacturers have a slightly more positive view of their mid-level employees but cite advanced problem solving, scientific, and computer skills (23%) and leadership skills (22%) as most lacking. Nearly a quarter (24%) cite a lack of leadership skills as concerns with their management-level employees.

When evaluating more specific deficiencies in basic skills, the lack of work ethic (36%) followed by math (30%), and writing (24%) skills are most prevalent among entry-level employees. Mid-level and management employees are

**WHAT SKILL SETS ARE MANUFACTURING WORKERS MISSING?**

■ Entry-level ■ Mid-level ■ Management



comparatively better prepared when it comes to basic math and reading skills; however, for mid-level employees, top concerns are a lack of verbal communication skills (15%), computer skills (14%), and writing (13%).

To address some of the skill deficiencies discussed here, 54% of respondents report offering on-the-job training to their entry-level employees, 45% offer the same to mid-level employees, and 29% offer the same to their management-level employees. Classroom and online training either during or outside of work hours is also offered, though much less commonly. As technology continues to evolve and company experience and comfort level with distance learning increases, the use of online training may see rapid growth in the future.

## Workforce Demographics

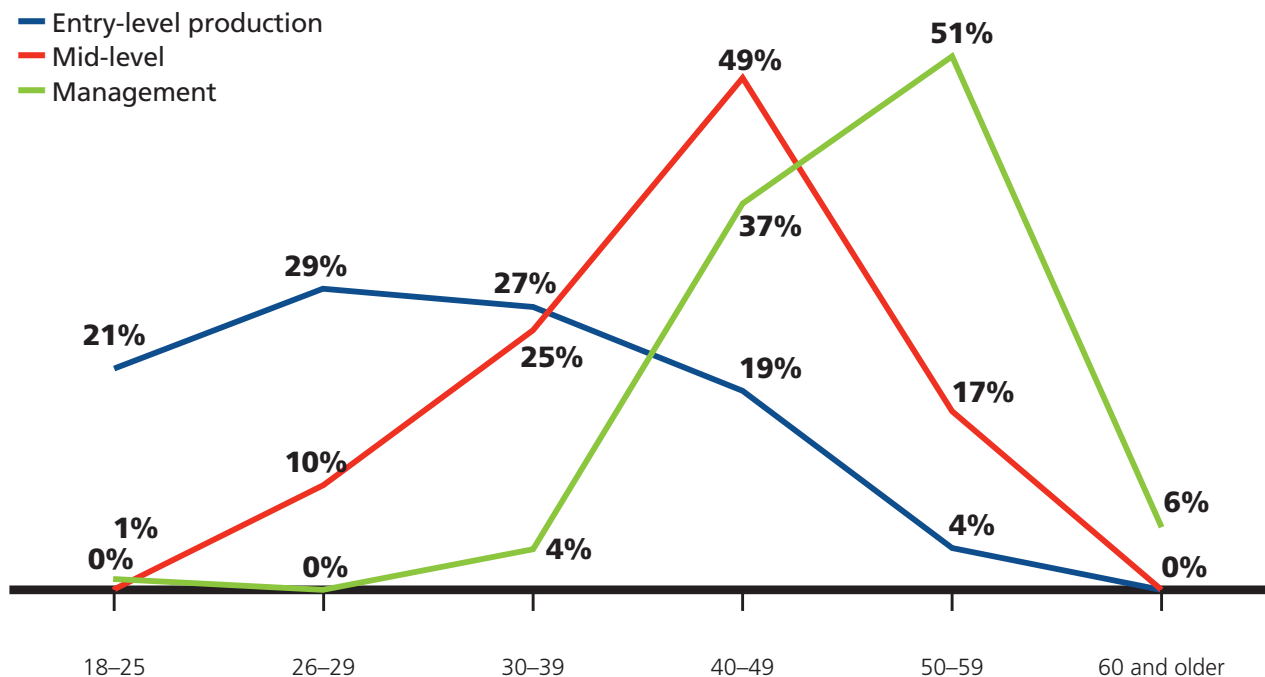
Respondents on average expect 2% of their workforce to retire by the end of 2011, 5% to retire by the end of 2014, and over 7% by the end of 2016. They plan to fill these vacancies by providing additional training to existing workers (36% of respondents) and using a targeted hiring/recruitment plan

**“In terms of workforce development, manufacturers are at a critical juncture. They face an exodus of mid- and senior-level employees who will take with them longstanding institutional knowledge and experience; at the same time, many incoming workers do not appear to have critical basic employability skills to replace them. It is imperative that business and education come together to enhance manufacturing education and training programs so that graduates are better prepared for current and future jobs. Doing so presents a wonderful opportunity to infuse programs with management and leadership skills needed for advancement.”**

**Judith K. Resnick**

Executive Director, CBIA Education Foundation

### ESTIMATED AVERAGE AGE OF WORKERS BY CAREER LEVEL



**“The proper technical skills of our employees are a vital piece of the puzzle for any manufacturer. The survey demonstrates a wide variety of demand by Connecticut companies from blueprint reading to CNC programming, all of which can be filled through the continued engagement of our education system; still, challenges remain to ensure basic skill set deficiencies are addressed.”**

**Allen Samuel**

Executive Director, Aerospace Components Manufacturers

(32%). Of some concern are the 12% of respondents who plan to outsource work currently done in Connecticut as a means to address their retirement concerns.

Some businesses have adopted a proactive approach to recruiting the next generation of workers; 21% of respondents offer student internships, 17% participate in plant tours, and 13% participate in career/technology fairs. Another 14% are willing to participate in job shadowing, plant tours, and student internships, while 12% of respondents are willing to participate in a focus group on Connecticut's manufacturing workforce. These are great first steps to help address the

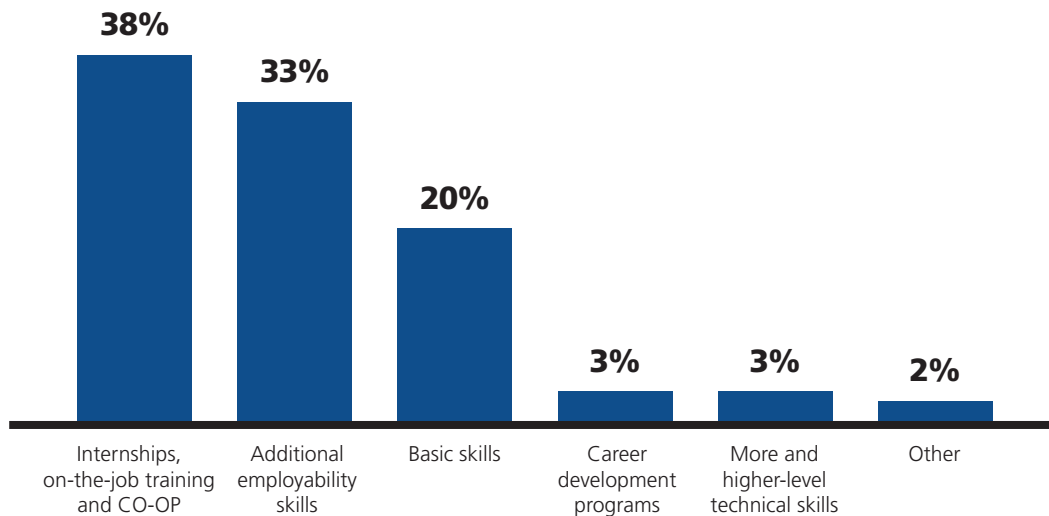
current and future needs of manufacturers, but additional efforts are needed.

### Conclusion

The 2011 Survey of Connecticut's Manufacturing Workforce shows a picture of manufacturing in the state that primarily hires from technical and traditional high schools, that is considerably more satisfied with graduates of technical high schools, and that finds the highest levels of satisfaction among graduates of colleges and universities, including community colleges. Respondents see moderate workforce growth over the next few years but are having problems filling the most technically advanced of their positions. In addition to needing employees with greater critical thinking and blueprint reading skills, Connecticut's manufacturers are concerned about the lack of basic math/writing and employability skills of entry-level employees. They also believe that mid-level and management employees need stronger leadership skills.

As mid-level and management employees near retirement age, the skill deficiencies of entry-level employees create serious challenges for the manufacturing sector. In addition to on-the-job training and internships, training prospective and incumbent employees in managerial and communication skills could better help prepare them to fill the mid-level and management positions that will open up in the future. The state's manufacturers and educational institutions have be-

### IMPROVING THE JOB READINESS OF COMMUNITY COLLEGE GRADUATES



gun to address these issues, but efforts must be brought to scale to create a pipeline of talented and educated workers readily available to help Connecticut manufacturers compete in a global economy.

## Demographics

Metals (20%) and aerospace manufacturers (17%) account for the greatest share of survey respondents. Also represented are machinery companies (10%), plastics/rubber (7%), computer and electronics (7%), and electrical manufacturers (7%), and manufacturers of medical and pharmaceutical products (6%). Sixty percent of companies employ fewer than 50 individuals; 35% employ between 50 and 199; 5% have 200 or more employees. The majority of respondents (30%) are located in Hartford County, followed by New Haven (22%), Litchfield (14%), Fairfield (12%), Middlesex (10%), Windham (8%), Tolland (3%), and New London counties (1%). Gross revenues

range from less than \$1 million (8% of respondents), \$1 million to \$4.99 million (37% of respondents), \$5 million to \$24.99 million (44%), and more than \$25 million (11%).

## Methodology

The survey was e-mailed in mid-April to early May 2011 to CBIA members who are classified as manufacturers; 273 responded, for a response rate of 23%.

The percentages quoted in this report relate to the number of respondents answering each question; thus the sample size for each question varies. In addition, all figures are rounded to the nearest whole number and may not total 100%. The margin of error is +/- 6%.

For more information or additional copies of this report, please contact Jason J. Giulietti at CBIA (860.244.1900 or Jason.Giulietti@cbia.com) or visit [cbia.com/business](http://cbia.com/business) to download the report.

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#### The Regional Center for Next Generation Manufacturing

(RCNGM) addresses the need for highly skilled workers in the new manufacturing workplace by building programs that provide resources to educators and students interested in learning new technologies in manufacturing. The Center is directed by the Connecticut Community Colleges' College of Technology (COT), a virtual organization representing technology curriculum geared toward engineering and technician training offered at Connecticut's 12 community colleges. The Regional Center for Next Generation Manufacturing is funded by a grant from the National Science Foundation, awarded to the Connecticut Community Colleges' College of Technology. For more information, visit [nextgenmfg.org](http://nextgenmfg.org).



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**CBIA's Education Foundation** is a nonprofit affiliate of CBIA whose mission is to help develop a skilled, knowledgeable workforce in Connecticut. Established in 1983, the foundation, a 501(c)(3), works by strengthening educational policies and practices, stimulating career development and exploration, and promoting job training to match employer needs.

For 25 years, the Education Foundation has been a leader in the development of model programs to improve educational outcomes for Connecticut's students. Grants and public-private partnerships have enabled us to create and administer programs that increase academic excellence and rigor; develop students' employability skills and provide them with practical work experiences through job shadowing, internships, company tours, and guest speakers from the business community; coordinate externships for teachers in the workplace; create forums to identify effective schools and model programs that work; promote high-demand manufacturing careers through Connecticut's technical high schools, community college system, and school- and university-based engineering programs; and provide training and job placement services for current and future employees. For more information, visit [cbia.com/edf](http://cbia.com/edf).

