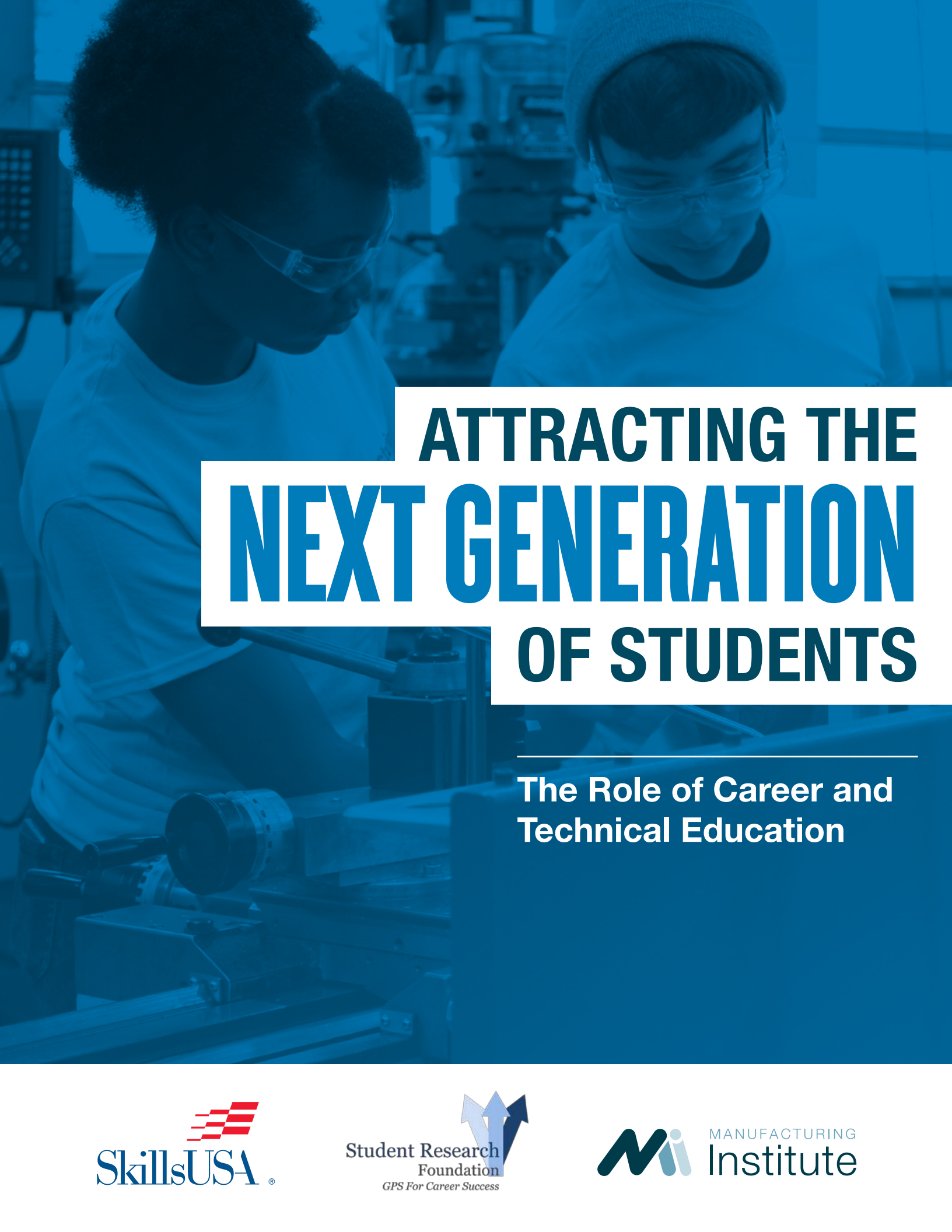


A photograph of two students in a workshop setting, overlaid with a blue tint. The student on the left is a Black woman with short curly hair, wearing safety glasses and a white t-shirt, looking down at a workbench. The student on the right is a white man wearing a grey beanie, safety glasses, and a white t-shirt, also looking down. They are surrounded by various mechanical tools and equipment.

ATTRACTING THE NEXT GENERATION OF STUDENTS

**The Role of Career and
Technical Education**





About the Partners

The Manufacturing Institute is the 501(c)(3) affiliate of the National Association of Manufacturers. As a nonpartisan organization, the Institute is committed to delivering leading-edge information and services to the nation's manufacturers. The Institute is the authority on the attraction, qualification and development of world-class manufacturing talent.

www.themanufacturinginstitute.org

SkillsUSA improves the quality of America's skilled workforce through a structured program of citizenship, leadership, employability, technical and professional skills training. SkillsUSA enhances the lives and careers of students, instructors and industry representatives as they strive to be champions at work.

www.skillsusa.org

The Student Research Foundation, a 501(c)(3) organization, serves as the voice for young people's career aspirations. The Student Research Foundation works closely with Research Consortium partners to conceive, analyze and present data. By defining career pathways with partners and helping students reach those paths, the Foundation strengthens the nation, its economy, and its citizens.

www.studentresearchfoundation.org

ATTRACTING THE NEXT GENERATION OF STUDENTS

Manufacturers across the country are uniting around efforts to attract the best and brightest talent to manufacturing careers. These efforts must start early if they're going to have a steady pipeline of talent for years to come, and students enrolled in career and technical education (CTE) courses are the exact target group to attract to manufacturing careers. To aid in this work, [The Manufacturing Institute](#), in partnership with [SkillsUSA](#) and the [Student Research Foundation](#), have conducted an annual survey to identify the characteristics of experiences that impact student career choices. The purpose of the survey is to inspire dialogue between parents, educators, counselors and students, with the goal of better aligning programs and services with students' needs and preparing them for careers ahead.

Topline Report Findings

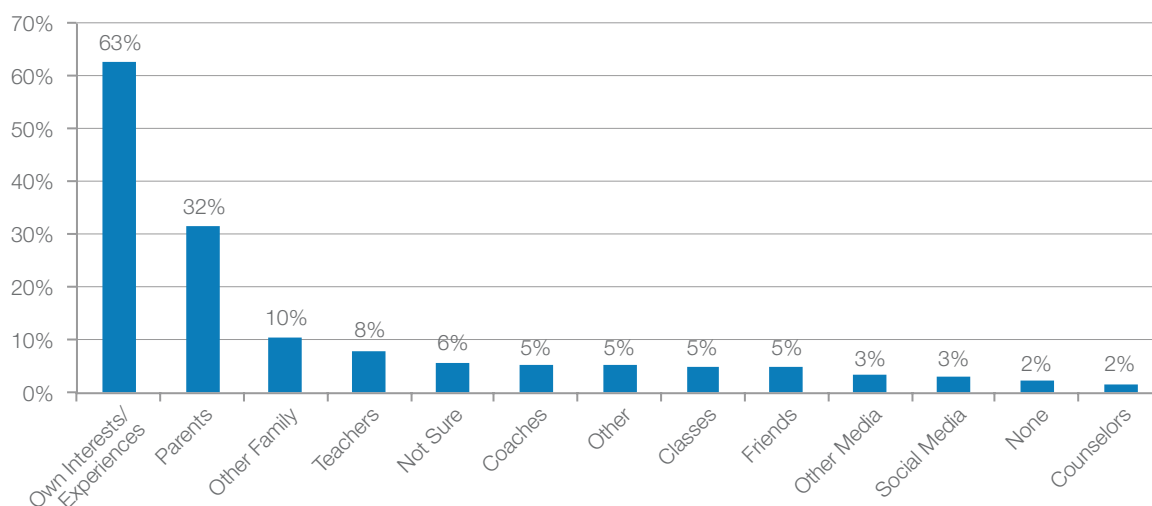
- 63 percent of students enrolled in CTE courses see their own interests and experiences as a major influence in their career pathway, and parents are the second-largest influence at 32 percent.
- 35 percent of students enrolled in CTE courses say they have no contact with potential future employers, with only 12 percent experiencing site visits, 20 percent having pathway-related summer jobs and 13 percent having pathway-related after-school jobs.
- CTE teachers believe industry-recognized credentials are valuable to students for beginning their careers, with 65 percent saying industry certificates are among the most valuable educational credentials after graduating high school.



STUDENTS

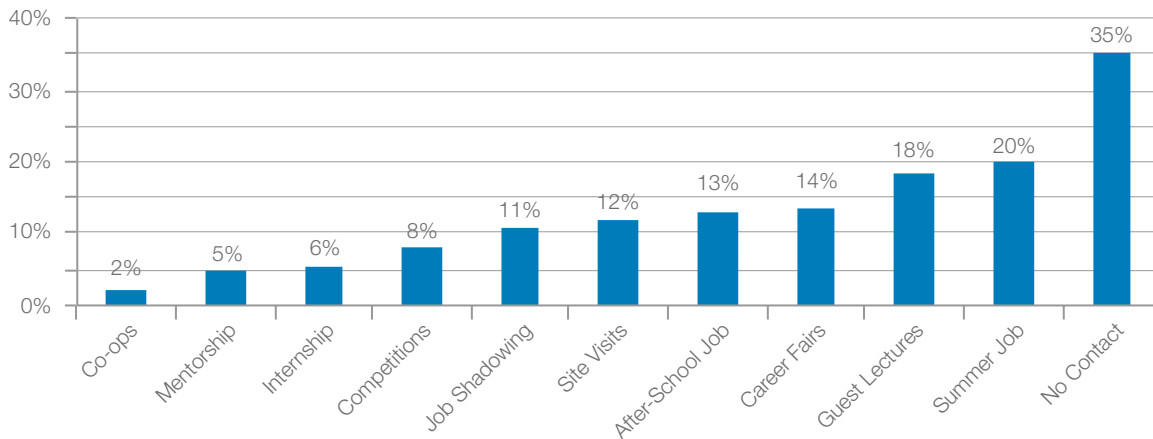
Attracting students to manufacturing careers must start with early exposure to opportunities in the field to show the types and range of career opportunities possible. One way to address this is by providing more opportunities for experiential learning, as 63 percent of students enrolled in CTE courses see their own interests and experiences as the biggest influence in their career pathway. Parents come in as the second-largest influence at 32 percent. This makes sense, as parents are often the ones to influence the experiences students have access to by enrolling them in CTE courses, summer camps or student organizations. CTE courses have a major impact on students' postsecondary plans as well, as shown by more than four in five students enrolled in CTE courses who say they either plan to pursue their career path or that CTE made their career path clearer aspire to postsecondary education.

Student Influences in Career Pathways



Parents, teachers and future employers must all come together to engage students enrolled in CTE courses early, providing a broad range of experiential learning activities. Although this is the target audience for future manufacturers, 35 percent of students in CTE courses say they have no contact with potential future employers. Only 12 percent have experienced site visits like those offered through [Manufacturing Day](#), which occurs the first Friday in October and is a celebration of modern manufacturing meant to inspire the next generation of manufacturers. Twenty percent or less have worked in summer or after-school jobs with potential future employers. Knowing that students' interests and experiences play such a crucial role in choosing their career path, they must have frequent and varied exposure if they're going to remain interested in these education pathways.

Student Exposure to Potential Future Employers



Manufacturing Day

Manufacturing Day aims to address misperceptions about manufacturing and connect younger workers to the industry by promoting local events. Generally occurring the first Friday in October, companies and community organizations can choose any day of the year to host an event. There were more than 2,800 events held in North America in 2016 alone. Facility tours, presentations, demonstrations and roundtable discussions engage students, parents and instructors to inform them on what present-day manufacturing looks like. Manufacturing Day events make a real impact for students who participate, too, and in 2016, students who attended the events were asked to participate in a survey administered by Deloitte, which **found** the following:

- 89 percent were more aware of jobs in their communities.
- 84 percent were more convinced that manufacturing provided careers that are interesting and rewarding.
- 64 percent were more motivated to pursue manufacturing careers.

Vermeer's 2016 Manufacturing Day Event

Vermeer Corporation invited local schools to an on-site Manufacturing Day event with the goal of expanding general knowledge of manufacturing and its careers. At 30 different activity areas, Vermeer team members spoke about their unique role and skill set, how it impacted the world and offered a hands-on activity or question that complemented that discussion and/or highlighted a related STEM [science, technology, engineering and math] concept. Sample activities included SolidWorks demos, a welding simulator, a safety activity, the translation of currencies with accounting and the printing of flashlights on a 3-D printer.

To ensure manufacturers across the country have access to engage the next generation of talent, the Institute runs a student engagement program called [Dream It. Do It. \(DIDI\)](#). This program works to change the perception of the industry and inspire next-generation workers to pursue manufacturing careers by providing real-world manufacturing experiences. In addition, The Manufacturing Institute's [Ambassador Program](#) provides a strategy to empower manufacturers to reach and inspire the next generation of manufacturing leaders and increase the talent pool of younger workers. This program provides manufacturers with all they need to begin engaging their



future workforce and expose more students to manufacturing careers. By having currently employed young leaders serve as the spokespeople for manufacturing, companies are able to provide a relatable role model to the students who may be the next generation of workers.

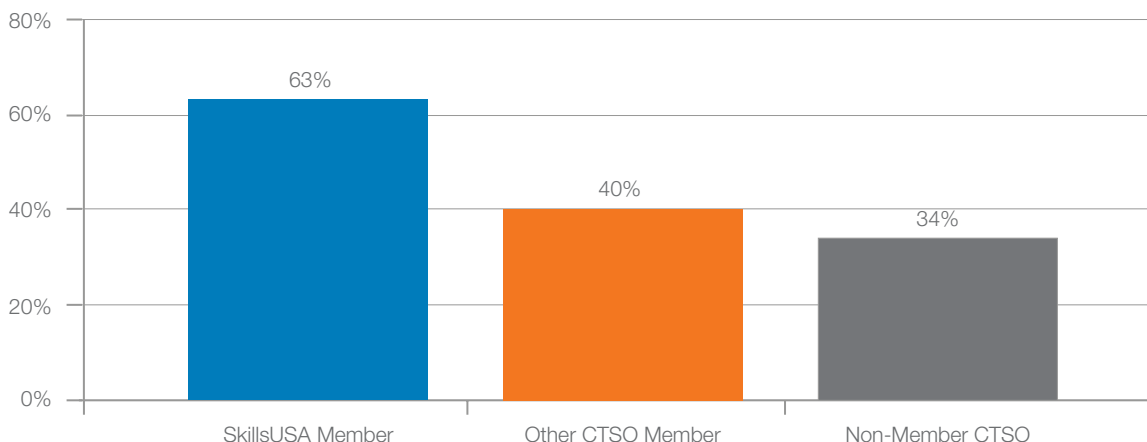
Cooper Tire's Ambassador Program

Members of Cooper Tire's Dream Team Ambassador Program are charged with rejuvenating the image of manufacturing and advocating manufacturing as a desirable career option in each of the U.S. communities in which the company operates. The team of 40 participates in local events to showcase manufacturing as an entry ticket to a rewarding career. In addition to Manufacturing Day events, Cooper's Dream Team members visit schools and community events and speak to the media to discuss manufacturing as a high-tech industry that provides meaningful, viable and financially rewarding career opportunities. Dream Team members provide real-life testimonials about why they chose their careers, why they enjoy working at Cooper Tire and some of the real-life opportunities they have experienced since joining the company.

Dream Team members also partner with local schools to host or participate in community events providing attendees with an impactful learning experience. An example of this is the Dream Team members working with the Lego Lean Manufacturing curriculum offered to middle-school students each year and a camp held for students participating in the American Association of University Women program each January. Dream Team members are energetic employees who will play an important role in the community as they represent the manufacturing industry. They bring forward a message of inspiration, passion and drive to young people who will soon be starting a career. Working with students and the community, Dream Team members help students envision themselves in manufacturing, or at the very least, not automatically counting manufacturing out, as they decide on their career paths.

The challenge is clear: offer students greater opportunities to experience manufacturing and develop a familiarity with the industry. DIDI partners with career and technical student organizations (CTSOs) like SkillsUSA to provide students with hands-on, project-based learning opportunities in a technical field. SkillsUSA, for example, encourages teams from individual schools to participate in state, national and even international competitions. These programs deliver clear benefits for CTE students, with 63 percent of SkillsUSA members planning to pursue their chosen CTE field as compared with only 34 percent of students who are not members of a CTSO.

Percentage of Students Who Plan to Pursue Careers in CTE Field of Study

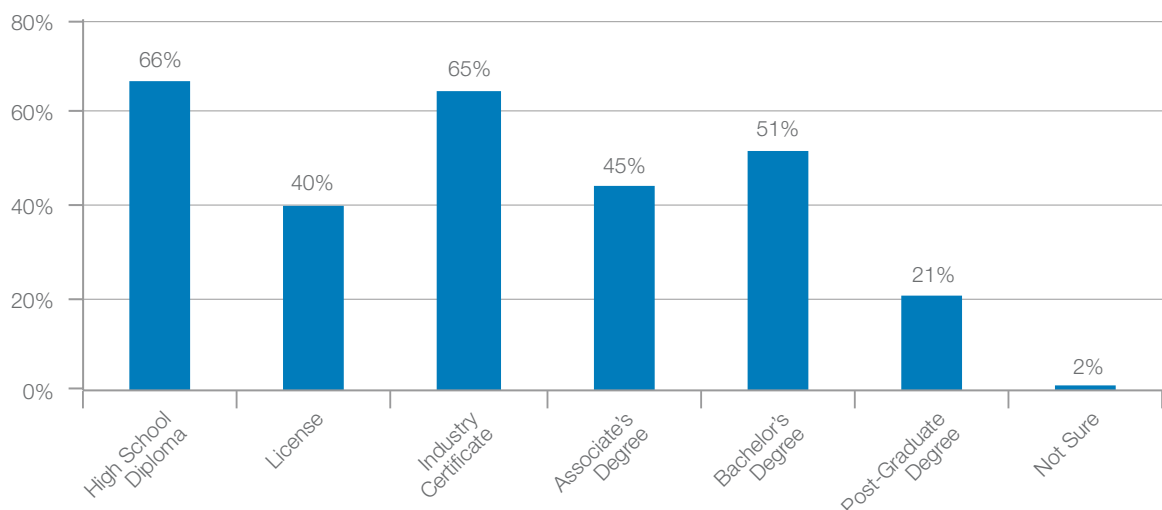




EDUCATORS

CTE teachers believe industry-recognized credentials are valuable to students for beginning their careers, with 65 percent saying industry certificates are the most valuable educational credentials after graduating high school. This also aligns with The Manufacturing Institute and Deloitte’s [“2017 US Public Perception of Manufacturing Report,”](#) which found that certification programs are the second best way to increase interest in manufacturing behind internship programs.

Which Educational Credentials Are Most Valuable to Students for Beginning Their Careers?

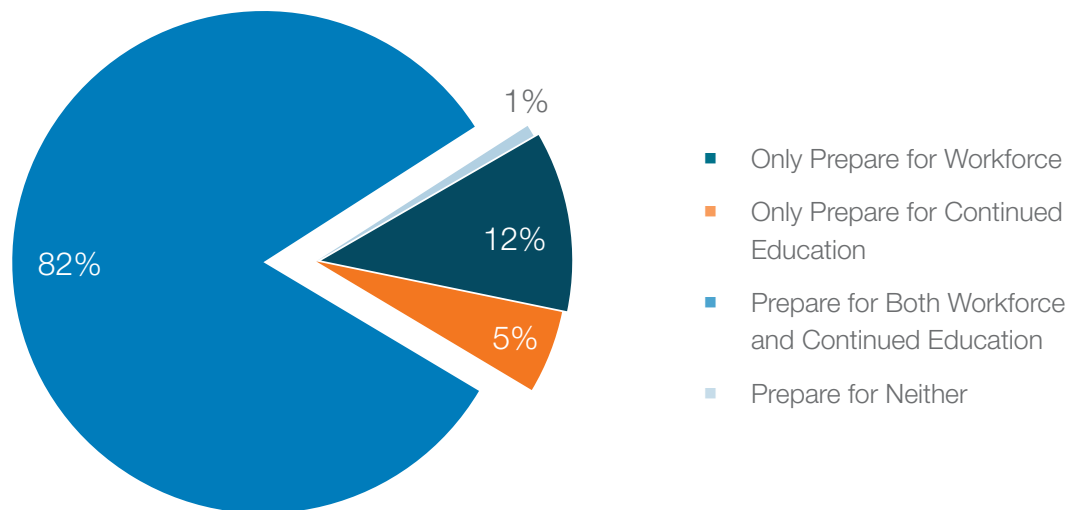


Employers, too, are increasingly relying on industry certificates, such as those offered by the [NAM-Endorsed Skills Certification System](#), to ensure that potential talent have a standard set of skills and competencies no matter where they earn their credentials. Since 2012, more than 500,000 NAM-endorsed certifications have been awarded across the country, and the Institute’s [M-List](#) recognizes those schools that offer industry credentials as a standard part of their course curriculum, with almost 200 schools on the M-List.



CTE has long faced a perception challenge that students enrolled in these courses are being prepared only for the workforce and not for additional education. Despite this challenge, educators' opinions of CTE continue to improve, and now 82 percent of teachers say that CTE prepares students for the workforce *and* continued education, compared with 78 percent from the 2015 report "[Attracting the Next Generation Workforce](#)."

Teachers Say CTE Prepares Students for Workforce *and* Continued Education



As these opinions improve, so, too, do educators' interest in learning more about CTE options for students. Seventy percent of surveyed teachers said they would like to learn more about CTE options available for students. The DIDI network has several great resources for teachers to learn more about career opportunities, including ways for employers to engage in summer externships to give teachers hands-on experience in modern manufacturing.

GenMet's Teacher Externship

Over the past few years, GenMet has hired three local high school teachers to work for the summer in its facility. As a result, these teachers have a better understanding of concepts they teach in their classroom using what they learned at GenMet. Teachers are able to use real-life analogies to explain to their students what they learned from their experience.

By hiring teachers, GenMet can reach an entire classroom of students rather than just one or two students from a tour or from parents. By being heavily involved in its local high schools and tech schools, GenMet is changing the perception of manufacturing by showing teachers what modern, advanced manufacturing looks like and the types of skills that are required to succeed.



PATH FORWARD

Meeting the demand for a new generation of manufacturing workers by drawing on the talent of all sectors of the U.S. workforce is more likely if the following occur:

- Students gain access to experiential learning opportunities early in their education pathway and these opportunities increase throughout their high school education.
- Employers engage early to provide activities like guest lectures, site visits or even employment opportunities like summer or after-school jobs and internships.
- High school students can join CTSOs like SkillsUSA or engage in the DIDI network to increase engagement opportunities early in students' academic pathways.
- Parents and teachers gain access to local employers to learn about the broad range of opportunities modern manufacturing presents.

Methodology

The survey was conducted between August and December 2016 in class with students and teachers. In total, 56,894 high school students and 1,252 high school teachers responded. Students participating in the survey were enrolled in at least one CTE program of study.



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