

Implementing a National CTE Identity Framework:

Building a Robust and Diverse Advanced Manufacturing Workforce Pipeline

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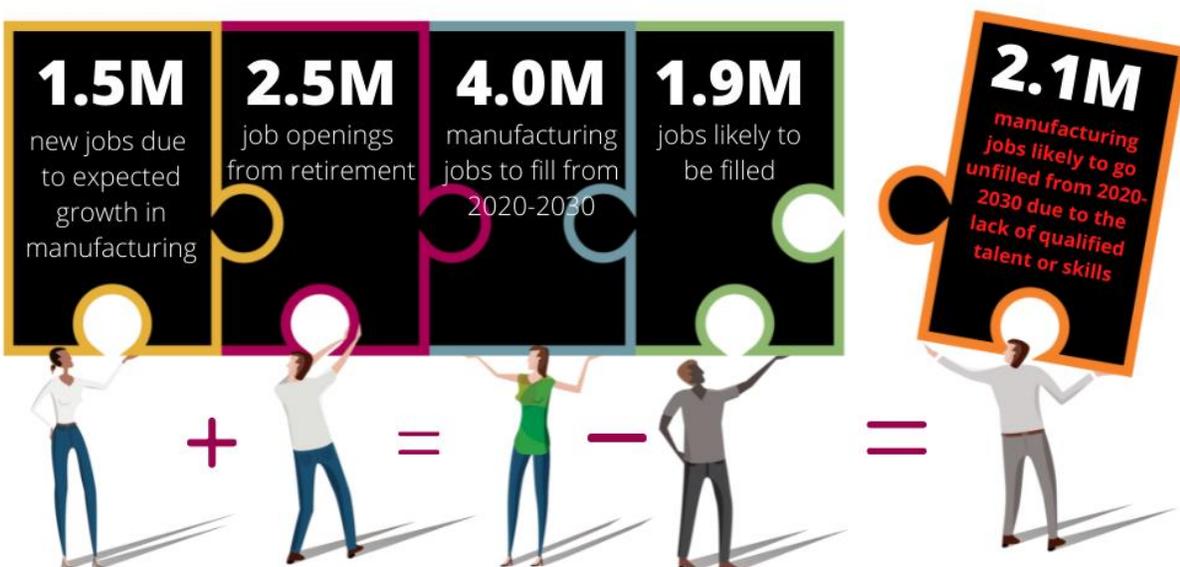
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The Problem

The U.S. manufacturing sector employs roughly 12.4 million people yet has maintained close to a million open jobs since 2018. According to The Manufacturing Institute, as many as 2.1 million jobs could go unfilled if current trends in hiring and retention continue and millions of skilled workers reach retirement ageⁱ. Rapid technological advances, combined with global economic forces, are changing how products and services are conceived, designed, produced, and distributed. This accelerated pace of change is challenging the capacity of education and workforce providers.

Manufacturers must have access to sufficient domestic talent to scale up new technologies, sustain industrial competitiveness, and support national security, yet the talent pipeline from current U.S. education and training systems is inadequate to meet demand. Manufacturers using advanced technologies are therefore hindered by a large gap between the skills needed to boost innovation and the skills possessed by potential workersⁱⁱ.

An estimated 2.1 million open positions may prove difficult to fill by 2030



Source: Deloitte analysis of data from the Bureau of Labor Statistics and estimates from the Deloitte economic analysis using the Oxford Global Economic Model

The economic impact of the inability to fill vacant positions is significant. Based on a survey conducted by Deloitte Insights in Fall 2021 of over 800 manufacturers across various sizes and subsectors, manufacturers reported that vacant jobs impacted vital aspects of business operations: growth as measured by revenue (82%), production levels to satisfy customer demand (81%), new market opportunities (79%) and new product development and innovation (79%). Because of manufacturing's multiplier effect, i.e., for every US\$1.00 spent in manufacturing, another US\$2.74 is added to the economyⁱⁱⁱ, leaving open jobs unfilled in manufacturing could bring a potential negative impact to the U.S. economy of more than US \$1 trillion by 2030 alone^{iv}.

At the same time, the American workforce is changing. According to the 2015 U.S. Census projections, by 2044 more than half of all Americans are projected to belong to a minority group, and by 2060 nearly one in five of the nation's total population is projected to be foreign-born^v. These changes signal that the talent pipeline will be more diverse and that inclusion and equity are non-negotiable for a viable future for our nation. Manufacturing has been traditionally dominated by males, with less than one-third of the jobs filled by women. Diversity, Equity, and Inclusion (DEI) has become a focus for manufacturers across the country because building a more diverse and inclusive culture is paramount to maintaining an edge in the global market. To access these talent pools, the cultural shift must be a collaborative effort of the entire manufacturing workforce ecosystem.

While numerous economic, demographic, political, and technological factors are at play, the focus of this paper is on the fragility of the U.S. Advanced Manufacturing talent pipeline. This critical weakness impacts the entire ecosystem of advanced manufacturing enterprises across the nation. Focused attention on reversing the skills gap in advanced manufacturing is critical to maintaining competitiveness in global markets and fortifying national security.

The Strategy for American Leadership in Advanced Manufacturing warns that many people who may benefit the most from the high-skill, high-paying jobs in manufacturing are missing out due to outdated presumptions that all manufacturing jobs are still repetitive, labor-intensive, and low-paying, or concerns about the future of such jobs in America^{vi}. Unlike European and Asian counterparts, many students and prospective workers in the United States undervalue or misunderstand manufacturing and the growing need for a skilled, technical workforce. As a result, both students and job seekers dismiss valuable options for manufacturing education and training provided through Career Technical Education (CTE) at high schools, technical schools, and community colleges^{vii}. Pervasive biases continue to portray CTE as an alternative pathway for those with lesser capabilities or lower career aspirations. It is an economic imperative that this change.

Career technical education at both the secondary and post-secondary levels should be embraced – by students, parents, counselors, job seekers, businesses, unions, and key other stakeholders – as a viable aspirational pathway that is essential to the economic viability of our nation.

The Proposed Intervention

Students, parents, counselors, businesses, and educational leaders must begin to embrace CTE graduates as highly focused, highly engaged learners and workers with a unique blend of job-ready skills and collaborative academic experience. CTE must become a primary, aspirational pathway that expands the number of skilled manufacturing workers available to fill good middle-skill jobs and help transform communities through economic empowerment and increased intellectual capital. As the United States continues to become more diverse, expanding career opportunities for all populations is one of manufacturing's best opportunities to develop a robust talent pipeline to close the skills gap.

In response to the challenge, ASHLIN Management Group, in cooperation with the Association for Career and Technical Education (ACTE), released [Addressing the Need for a National CTE Identity Framework: A Blueprint for the Next Generation of High Quality CTE in March 2021](#)^{viii} The intent of the Framework is to facilitate and create a new identity for CTE that will emphasize the dignity of work and the pride associated with jobs critical to the growth of the economy. As a nation, we need to replace the pervasive negative stigma with positive images of CTE as a primary path towards good jobs, not an alternative path associated with concepts of “lesser” and “menial.”

A National CTE Identity Framework will bring awareness and “message discipline” to how career technical educators and supporters talk about and present CTE. This messaging will eradicate the old stereotype and, over time, replace it with a new, more aspirational identity. Such discipline and awareness are a necessary first step to correct social biases that impede students and other potential adult workers from entering and thriving in CTE programs and graduating into self-supporting careers.

In April 2021, a panel of thought leaders from the Department of Labor, Department of Education, National Institute for Manufacturing and Technology/ Department of Commerce, Advanced Manufacturing Office of the US Department of Energy, Manufacturing USA Institutes, and others voiced consensus on the need for change. There was widespread agreement that the research-based CTE Identity Framework is viewed as a valuable tool in meeting that challenge and supporting U.S. economic recovery efforts.

The Framework can also support efforts to enhance Diversity, Equity, and Inclusion (DEI). Expanding the CTE pipeline to include people of color, women, foreign-born, and individuals with disabilities will be essential to tap into our nation's full potential and open new career pathways for American workers. Adjusting messaging using the CTE Identity Framework will help manufacturers meet their DEI mission by affirming possibilities for good jobs and economic empowerment to a larger, more diverse pool of candidates.

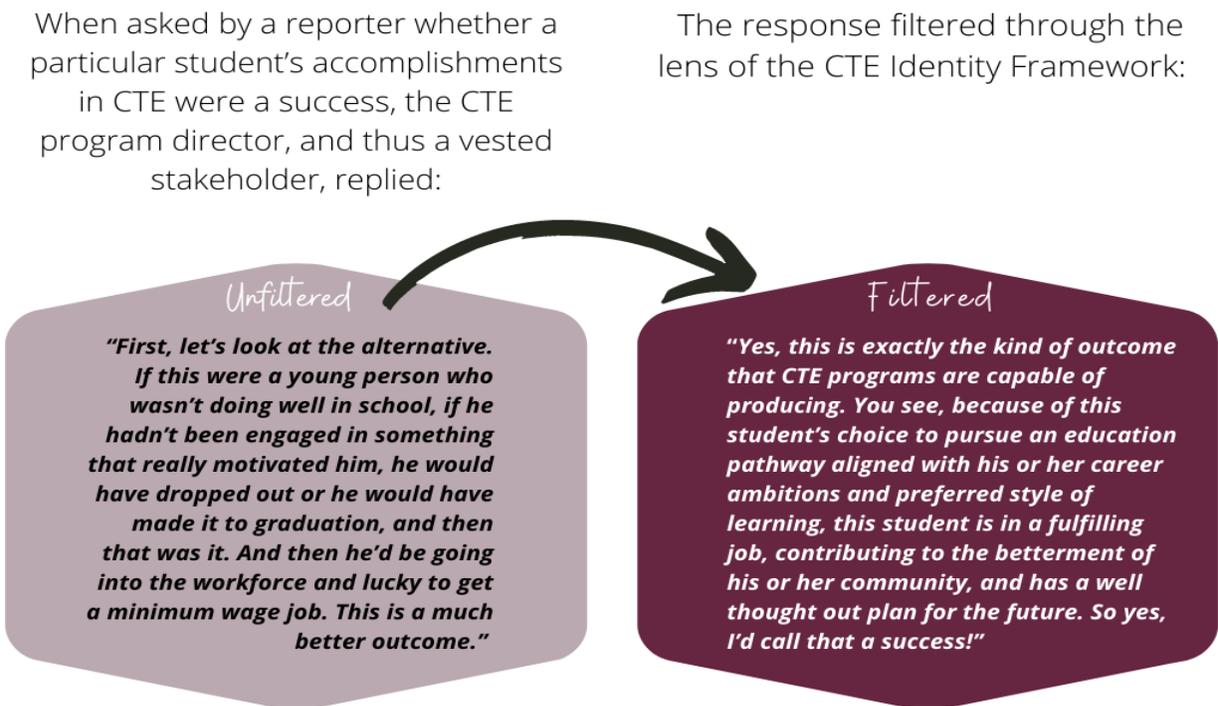
The next critical step is to disseminate the Framework across stakeholder groups and to train organizations and individuals to use it. Continuous support and monitoring of efforts will be critical in evaluating the impact of a shift in approach and attitude. The timing is perfect. President Biden's proposed [American Families Plan](#) includes major investments in CTE and vocational training. The plan also includes funding for school training and partnerships between high schools, community colleges, and employers to create programs that offer industry credentials that prepare students for high-wage careers upon graduation. As additional resources are invested in CTE and related strategies such as apprenticeship, it is critical that the messaging reflects the fact that CTE helps drive economic growth by producing a skilled workforce. These skilled workers will be well-prepared to make valuable contributions to employers and communities.

The Timing is NOW

Now is the time to launch broad-based adoption of the CTE Identity Framework in support of the advanced manufacturing community. CTE educators and stakeholders must be trained to use the CTE Framework to create a "Why it is we do what we do?" narrative to serve as a template and lens by which to think about how CTE is portrayed. The Framework is an internal document to help create and clearly articulate the compelling reasons why people would want to be part of CTE. It is NOT a specific tactic, tagline, or campaign – these are its outputs. Similarly, it is NOT a marketing scheme, a directive, or a strategy meant to replace or supplant stakeholders' current messaging efforts.



Below is an example of how the CTE Framework can be applied. Many organizations use facts and data to communicate the “what” regarding labor market information. However, weaving those same facts through the lens of the CTE Identity Framework presents a more compelling message of the “why.”



To realize this type of shift in communication and perception, key stakeholders who value this goal must help launch and support several strategic interventions. Merely disseminating the CTE Framework to interested parties will not achieve the type of national and systemic impact envisioned.

Sample interventions for manufacturing stakeholders might include:

- Attend a high-level, interactive online seminar that provides an overview of the CTE Identity Framework to learn how it can be used by organizations and individuals in the manufacturing ecosystem to create message discipline.
- Participate in a series of synchronous and asynchronous training sessions on the CTE Identity Framework and the self-assessment tool.
- Completion of self-assessment tool to examine current practices regarding CTE messaging. Are they sending clear, consistent, well-differentiated communications that reinforce an identity for CTE that is aligned with the Framework?
- Analyze existing marketing materials to determine opportunities to better align messaging as described in the CTE Identity Framework.
- Attend training for effective use of the Framework to achieve message discipline and a contextual approach toward weaving all messaging into a new CTE identity.

- Conduct ongoing monitoring of messaging materials; collect feedback; collect data on rates of engagement and who is participating; establish benchmarks and analyze data against those benchmarks.
- Share examples of realigned marketing materials.

Call to Action

Given the fragility of the manufacturing talent pipeline, the time is now to act and flood the public with consistent and positive messaging that extols the benefits of Career Technical Education. The CTE Identify Framework can serve as a pivotal tool and resource for making the vital shift to an aspirational CTE image for manufacturing a reality. Launching and supporting key interventions, as outlined above, will be critical to achieving the national and systemic impact envisioned.

For more information, contact [ASHLIN Management Group](#).

Endnotes

- i <https://www.themanufacturinginstitute.org/research/diversity-inclusion-benchmarking-in-manufacturing/>
- ii <https://www.nist.gov/oam/national-strategic-plan-advanced-manufacturing>
- iii <https://www.nam.org/facts-about-manufacturing>
- iv <https://www.themanufacturinginstitute.org/research/creating-pathways-for-tomorrows-workforce-today-beyond-reskilling-in-manufacturing/>
- v <https://www.census.gov/content/dam/Census/library/publications/2015/demo/p25-1143.pdf>
- vi <https://www.nist.gov/oam/national-strategic-plan-advanced-manufacturing>
- vii <https://www.nist.gov/oam/national-strategic-plan-advanced-manufacturing>
- viii <https://www.ashlininc.com/wp-content/uploads/2021/04/CTE-Identity-Framework-March-2021.pdf>