



**Statement of SME (formerly known as the Society of Manufacturing Engineers)
Before The U.S. House Education and Workforce Committee Subcommittee on Early
Childhood, Elementary, and Secondary Education**

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America's Manufacturing Workforce at a Crossroads

I will begin with a clear and urgent warning: America's manufacturing workforce is at a critical crossroads. The talent pipeline is shrinking, the skills gap is widening, and we need more young people stepping into manufacturing careers that both fulfill their ambitions and also provide the United States with the thriving workforce needed to remain the dominant economic world leader we have always been.

This is not a distant challenge. It is a crisis unfolding right now - today. The U.S. Department of Commerce is now reporting that the average age of a manufacturing worker is approaching 45. Even more alarming, for every four experienced workers retiring today, only one new worker enters the field to take their place. This imbalance threatens not only the future of American manufacturing, the strength and stability of our entire economy and most importantly our national security. For U.S. manufacturing, solving the talent shortage is mission critical.

About SME

I am here today representing SME, the national nonprofit at the forefront of accelerating the adoption of advanced manufacturing technologies and building the skilled talent essential to North America's continued, world-leading industrial strength.

With nearly a century of proven, results-driven experience, we are not only executing, we are leading in shaping the future of workforce development. Our unmatched national efforts, combined with deep-rooted, strategic partnerships across the workforce ecosystem, position us to drive real, lasting change. We work hand-in-hand with thousands of employers, from small businesses to industry-leading Fortune 500 corporations and collaborate with thousands of educational institutions spanning K-12, post-secondary, and technical education. Our network also extends to community-based organizations and local, state, and federal economic and workforce development agencies.

SME's broad and deeply integrated ecosystem allows us to bridge the gap between education and employment, align talent development with evolving labor market



needs, and accelerate innovation across sectors. Through this reach and expertise, we deliver scalable, high-impact solutions that empower individuals, fortify education, strengthen communities, and fuel economic growth nationwide.

Thinking Nationally, Acting Locally

It is through SME's national engagement that our work provides us with a unique clear line of sight into our country's priorities from inside national strategy sessions where key decisions are made. What truly sets us apart is that we are not only at the national table, but we are also working alongside our industry partners within communities and even deeper engagements from inside the four walls of manufacturing facilities every day. SME is our nation's boots to the ground, and it is this dual perspective that enables us to directly influence national strategies with real-world insights, grounded in a deep understanding of the day-to-day realities and challenges manufacturers are facing.

"Thinking nationally, mobilizing and acting locally" is core to SME's guiding mission. That means we are committed to driving workforce solutions that are both scalable across the nation and still responsive to the unique needs of regional and local communities. We believe both elements are essential to building a resilient talent pipeline as part of the strategy required for the United States to win the war for talent.

A National Security Imperative

This is not merely a talent pipeline issue affecting enrollments or recruitment. It is a national crisis that threatens our economic independence, global competitiveness, and national security. Workforce readiness will not fix itself. Without bold, coordinated action, the consequences will be swift and severe.

America needs a workforce pipeline that is agile, adaptable, and aligned with the technologies shaping modern manufacturing. Without it, our capacity to innovate, respond to crises, and maintain industrial independence is at risk. We must act now or risk losing our competitive edge, weakening supply chains, and undermining the economic strength that manufacturing has long provided.

The Power of Career and Technical Education (CTE)

Career and Technical Education (CTE) is a cornerstone of this mission. CTE classrooms are often the first point of exposure where students realize that modern manufacturing is nothing like the outdated images of the past. Through high-quality



CTE programs, learners experience firsthand that today's manufacturing is cutting-edge, tech-enabled, clean, and driven by innovation. Just as importantly, they come to understand that manufacturing is not only a dynamic career path, but also essential to the strength, competitiveness, and long-term resilience of the American economy. Through our work, SME bridges the gap between industry and education, ensuring that CTE programs don't teach outdated practices but instead equip learners with the forward-looking, transferable skills required for the rapidly evolving manufacturing landscape, including roles that don't yet exist. Our goal is to future-proof the workforce by aligning education with the cutting edge of industry innovation and incorporating technology in how we teach as well. The use of machine learning, artificial intelligence, augmented and virtual reality are not just tools for manufacturers, they are technology that enriches and improves the education process. This can no longer be a conversation, but a call to action.

Policy Recommendations

We urge Congress and state leaders to expand access to modern, industry-connected CTE programs in every community. These programs must equip and train the next generation for high-wage, high-tech manufacturing careers that meet both current and future workforce demands.

However, the nation faces challenges in early CTE exposure, educator recruitment and retention, employer engagement, and public perception. To address these, we recommend:

- Expand K-12 CTE programs through targeted funding and incentives.
- Design education systems around in-demand competencies to align with evolving job market needs and support adaptability across industries through transferable skills.
- Recruit and retain CTE educators through federal and state initiatives.
- Require active employer participation in CTE program design and delivery.
- Launch a national campaign to raise awareness about CTE's benefits and career opportunities.
- Integrate AI-based thematic units into K-12 vocational and CTE programs to expose students early to automation, robotics, and AI concepts relevant to the skilled trades.

Additionally, we encourage the development and recognition of industry-aligned alternative credentials—including certifications and micro-credentials—that validate skills acquired through non-traditional pathways. These offer flexible,



accessible routes into manufacturing careers and complement traditional degree programs.

Work-Based Learning: Rebuilding from Inside the Four Walls

As SME works to build the next generation of makers, we also see work-based learning as a promising practice to bridge the gap between education and employment. By incorporating internships, pre-apprenticeships, youth apprenticeships, and structured training programs, we are giving students and jobseekers alike the opportunity to gain practical, hands-on experience that goes beyond the classroom. These accelerated pathways develop critical thinking, problem-solving, and workplace skills essential for success and retention in today's manufacturing ecosystem.

SME in Action: PRIME and MI-WPC

SME is not merely making recommendations; we are actively solving workforce shortages through two national initiatives:

- PRIME (Partnership Response in Manufacturing Education) – a K-12 initiative preparing students through industrial equipment and technology procurement, industry-aligned curricula, dual-credit pathways, and real-world engagement in high schools.
- MI-WPC (Manufacturing Imperative–Workforce Pipeline Challenge) – a postsecondary program connecting 25 colleges across 17 states with their state manufacturing associations to test and replicate best practices for faculty upskilling and “train-the-trainer” models. This 3-year program is on target to educate 75,000 learners by 2027.

Together, these programs create seamless pathways from classroom to career. In PRIME schools, we have seen credential attainment sustain well above 90% and student interest in manufacturing careers remain above 90%. We further support this pipeline through teacher training, sustainability funding, and over \$1 million annually in scholarships awarded to students.

The Instructor Shortage: A Hidden Crisis

While developing the next generation of talent is essential, we cannot ignore one of the most critical issues in workforce development, the shortage of qualified



instructors. Many K–12 and postsecondary programs struggle to recruit and retain educators with current, real-world experience.

If unaddressed, this shortage will cause programs to stagnate, reduce enrollment capacity, and leave classrooms under-resourced. Waitlists will grow, and the nation’s ability to compete in advanced manufacturing will erode. Without skilled educators, we risk weakening the very foundation of our industrial capabilities.

We urge the committee to invest in the recruitment, development, and retention of CTE faculty. This investment is foundational to sustaining growth, innovation, and national competitiveness.

Urgency and Coordination

At the same time, continuing to focus on fragmented or siloed programs will not solve this national crisis. We need to think big picture. Yes, building a long-term talent pipeline is essential (K-12 focused), but the reality is that manufacturers are facing a workforce shortage today. We must act with urgency to identify and eliminate the systemic barriers preventing both young adults and adult learners from gaining the skills required to fill critical roles. This workforce gap means more than vacancies. These are vital positions that sustain our economy, bolster national security, and ensure the resilience of our supply chains and infrastructure. Addressing these challenges requires coordinated, nationwide action that is both immediate and forward-thinking.

The SME Maritime Manufacturing Workforce Pipeline

SME is responding to this national workforce crisis with coordinated, strategic action, most notably through the development of the Maritime Manufacturing Workforce Pipeline initiative. This initiative is specifically designed to address the shipbuilding industry’s urgent and growing workforce demands in the Gulf Coast and INDOPACOM regions. Both areas remain critical to our nation’s economic strength and warfighting readiness. Recognizing that no single siloed solution will close the skills gap, SME is implementing a comprehensive K–20 education approach, intentionally aligning K–12 education, post-secondary training, and workforce development programs to create a seamless and sustainable talent pipeline.

This braided model ensures flexibility while maintaining a unified vision, delivering workforce solutions that meet immediate labor needs, supporting mid-term reskilling and upskilling efforts, and building long-term capacity to sustain future



industry growth. By bridging educational pathways and aligning them directly with regional and national industry requirements, SME's initiative not only prepares learners for high-demand careers but also strengthens the strategic resilience of the U.S. maritime manufacturing sector. This is the kind of bold, system-level coordination required to reverse current workforce trends and ensure our industrial capabilities remain competitive and secure.

Early Career Exploration and Foundational Skills

Similarly, career exploration will need to begin as early as elementary and middle school to help students understand the real-world relevance of their education, especially in fields like manufacturing. Integrating stronger CTE math skills into the curriculum, such as metrology, measurement, and applied problem solving, gives students the foundation they need to succeed in modern manufacturing environments and paves the way to stackable skill development and programmatic alignment. These skills are critical for understanding precision, quality control, and technical processes on the shop floor. By connecting classroom learning directly to manufacturing careers, schools can spark interest early, develop practical competencies, and better prepare students for high-demand, high-skill jobs in today's advanced manufacturing industry.

Staying Ahead of Technology

Manufacturing is evolving at an extraordinary pace, driven by automation, data analytics, robotics, and artificial intelligence. These technologies are already shaping our daily lives and transforming how products are designed and produced. We cannot afford to be reactive. CTE and training programs must evolve in real time, preparing learners not only with technical skills but also with adaptability and innovation mindsets.

Embedding AI and emerging technologies into CTE curricula—starting early and integrating across disciplines—is essential to maintaining U.S. leadership. The future of American manufacturing depends on a workforce that is not just ready for change but equipped to drive it.

Conclusion

In closing, the stakes have never been higher, and we are facing a defining moment for U.S. manufacturing. A strong, skilled, and future-ready workforce is not just an economic asset, it is a strategic necessity for all Americans. We all have a place in this. This is not a problem we can leave to educators or policymakers alone.



Industry must lead. And when it does, all Americans benefit. Our companies are stronger. Our communities are stronger, and our nation is stronger.

Thank you for your time and your commitment to building and sustaining the future of America's manufacturing.