Association for Manufacturing Excellence

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GRADUATING CAREER-READY CITIZENS FOR 21ST CENTURY SUCCESS: LINKING EDUCATION AND MANUFACTURING TO ECONOMIC PROSPERITY

Building a Nation of **Makers**

Association for Manufacturing Excellence

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We are the **Association for Manufacturing Excellence** (AME), a not-for-profit, volunteer-based, practitioner-driven organization that has been helping our members grow their value propositions since 1985.

We are passionate about developing a **modern-day manufacturing renaissance**, **driven** by **people-centric leadership** coupled with enterprise excellence. **Our mission** is to **inspire a commitment to enterprise excellence** through experiential **learning** and **bringing people together** to ...

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Learn more at: **AME.ORG**

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According to new research from Deloitte and the Manufacturing Institute, **84 percent of manufacturing executives agree** the nation is now facing a critical "**skills gap.**"

By 2020, **65 percent** of all jobs in the economy will require **postsecondary** education and training.

In 2014, according to a National Assessment of Educational Progress (NAEP) report only **39 percent of 12th-grade students** had the mathematics skills and just **38 percent had the reading skills** needed for entry-level college courses.

Among not-enrolled youth who did not have high school diplomas, **unemployment rates** were **24.6 percent** for men and **32.1 percent** for women.

Research shows that **students who cannot read** at grade level **by the fourth grade** are more likely than proficient students to drop out of school. **Two-thirds** will **end up in jail** or on **welfare**.

Low literacy levels **cost** the **United States $225 billion** or more each year in non-productivity in the workforce, in crime and in loss of tax revenue **due to unemployment**.

The challenges are not only at the K-12 level. In 2012, America ranked **16th** in the number of **25–34-year-olds** with **college degrees**, out of **26** developed nations around the world.

In the United States, **41 percent of first university degrees** were awarded in social sciences, business and law, whereas **only 16 percent were awarded in science, mathematics and engineering**, one of the lowest percentages among the G-20 countries. Teachers' knowledge of the subjects they teach is the major characteristic related to student achievement.

There is a growing abundance of resources, organizations and partnerships devoted to literacy and career education, and this is poised to make a difference in the nation's skills gap and its impact on manufacturing.

A thriving manufacturing sector supports a thriving economy

Why is the manufacturing sector interested in education?
A strong educational foundation leads to career-ready citizens and the manufacturing sector relies on schools to produce these individuals.

Our **nation** relies on the manufacturing sector for a **strong economy**.

The impact of advanced technology and manufacturing is significant for economic prosperity. Manufacturing is by far the most important sector of the U.S. economy in terms of total output (Bureau of Economic Analysis, 2014). It has a large **indirect employment multiplier.**

For every person directly **employed** in **manufacturing**, manufacturing output supports **more than 1.4 jobs elsewhere** in the economy.

Reshoring Initiative President, Harry Moser states:
"A strong skilled workforce is key to reshoring and manufacturing growth."

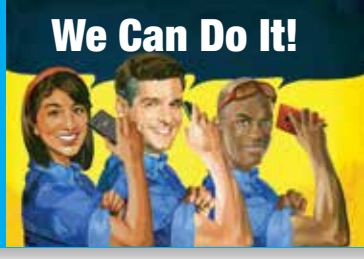
Manufacturing careers are lucrative.
In 2013, the **average manufacturing worker** in the United States earned **$77,506 annually**, including benefits, while average compensation for **workers in other industries** was $62,546.

On average, non-college educated workers in manufacturing made **10.9 percent more** than similar workers in the rest of the economy in 2012–2013.

A call for education to become more career-focused

One way to solve the nation's skills gap challenge is for educators to **increase the focus** on career technical education (CTE).

The **National Association of State Directors of Career Technical Education Consortium** (NASDCTEc) is dedicated to the proposition that success in school and life comes from **Career and Technical Education** (CTE) programs—"**Learning that works for America.**"



The **NASDCTEc and the Center for Occupational Research and Development** (CORD) have jointly published a book titled *The Career Pathways Effect: Linking Education and Economic Prosperity*, which offers guidance to states, local districts, postsecondary institutions and business leaders on systemic improvement.

The mission of the **Pathways to Prosperity Network** initiative of Jobs for the Future is to build, "systems of career pathways linking high school, work, and community college, to increase the number of youth who complete high school and attain a postsecondary credential with labor market value."

STEM literacy is an interdisciplinary area of study that **bridges** the **four areas** of **science, technology, engineering** and **mathematics.** STEM literacy means achieving literacy in the individual strands. STEM classrooms shift students toward investigating and questioning the interrelated facets of the world.

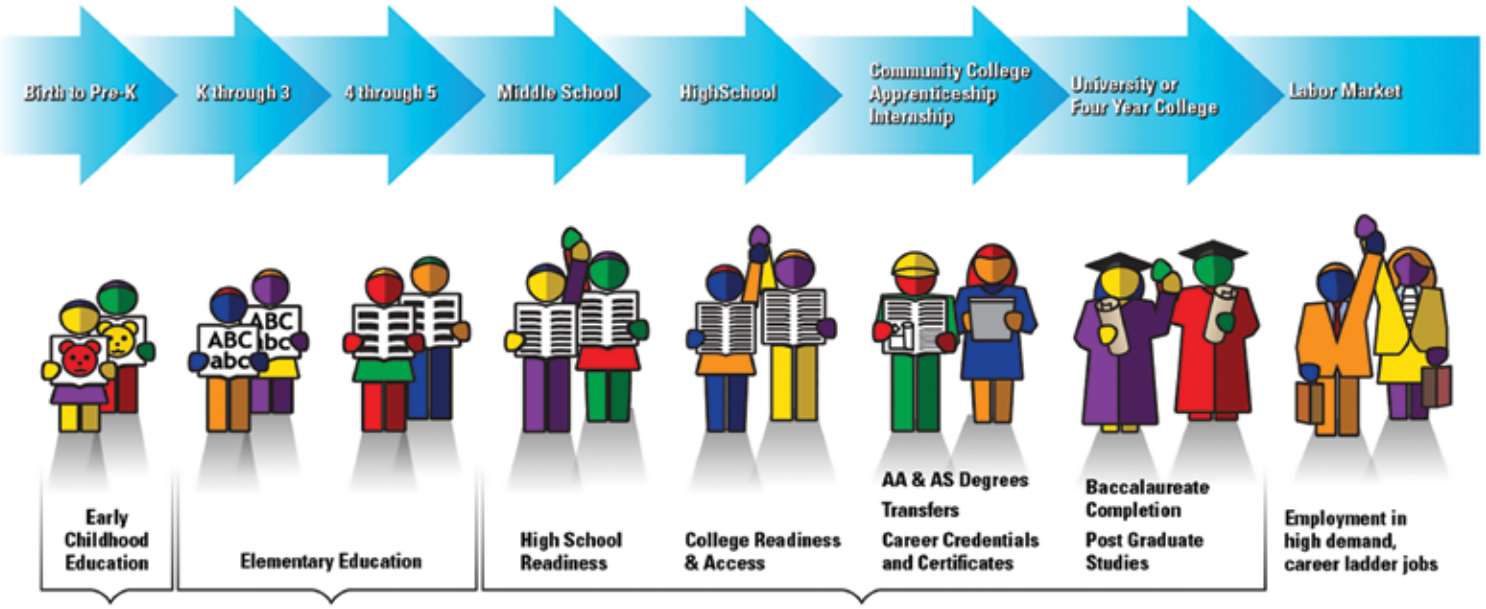
Courses may be held at a high school, technical center, community college campus, online or though other innovative methods. However, all programs must include opportunities for internships, job shadowing, mentorships, projects, service learning or a combination.

These programs and initiatives are worth the effort.

High-risk students are **8** to **10 times less likely** to **drop out** in grades **ten** and **eleven** if they **enroll in CTE programs** instead of general programs.

The average high school graduation rate for students concentrating in CTE programs is **90 percent**, which is about 10 percent higher than the national freshman graduation rate. On average, **70 percent** of **CTE graduates enroll in postsecondary classes**.

Preparing our children for their future



Source Literate Nation

Schools and communities are learning to leverage programs like **The Edge Factor,** which produces story-driven media and supporting resources on eduFactor.org, to **equip educators with tools designed to inspire and teach CTE**, advanced manufacturing careers and technology, STEM and more.

Project Lead The Way (PLTW) is a nonprofit organization that provides a transformative learning experience for K-12 students and teachers across the U.S. PLTW's pathways in computer science, engineering and biomedical science help students develop the in-demand knowledge and skills needed to thrive in an evolving world.

Government programs and advocacy initiatives support the cause

The Every Student Succeeds Act (ESSA) was recently signed into law with bipartisan support. ESSA contains many promising CTE-related provisions designed to improve alignment between state academic standards and state CTE standards and career guidance programs, and to increase focus on CTE student performance data.

The President's 2016 budget is designed to bring middle class economics into the 21st Century. It invests more than **$3 billion** in **STEM** education. Senator Tim Kaine (D-VA), co-chair of the U.S. Senate CTE Caucus said, "**CTE is an important pathway for students to prepare for the workforce by integrating practical applied purposes with work-based knowledge and a hands-on learning experience.**"

Building on these successful CTE programs is a Virginia Department of Education program called, **Governor's STEM Academies**. This program is designed to expand options for the general student population to acquire STEM literacy and other critical skills, knowledge and credentials that will prepare them for high-demand, high-wage and high-skill careers in Virginia. Each academy is a partnership among school divisions, postsecondary institutions and business and industry.

Community leaders and policymakers can leverage the **Alliance for Excellent Education** as it works to synthesize and distribute research and information about promising practices. It offers sound, objective, nonpartisan advice to make informed decisions about policy creation and implementation of new initiatives designed to graduate students ready for success in college, work and citizenship.

The Dream It. Do It. program provides access to support and resources to aid efforts in joining a network of industry leaders that implement activities to meet local, regional and statewide workforce needs. It also offers the opportunity to partner with a respected national platform to promote manufacturing as a top tier career choice.

Tooling U-SME combines the strength of its industry leadership in training and development with SME's dedication to promoting advanced technologies to manufacturers worldwide. Tooling U-SME offers an "incredibly diverse suite of training resources that includes professional consultative services, online training content, instructor-led training, book and video content and industry-backed certifications."

APQC North Star program helps education leaders capture, scale and sustain transformation to improve student outcomes. It helps educators redesign outdated or inefficient processes and break down functional silos which saves time, saves money and empowers people.

Manufacturers are partnering with schools to become part of the solution

While graduating from high school with adequate literacy skills and STEM training is critical for long-term success, it is only one link in the chain that will result in America developing a stronger economy through manufacturing.

The **Association** for **Manufacturing Excellence** (AME) is a not-for-profit organization dedicated to the journey of **continuous improvement** and **enterprise excellence**.

AME is committed to fostering a "**Renaissance of Manufacturing in North America**" and has developed several programs to encourage young adults to enter the manufacturing field. As well as promoting manufacturing as a career path by providing scholarship opportunities through the **Dr. Sherrie Ford Manufacturing as a Career Path Scholarship.**

The AME Adopt-a-School program coupled with national **Manufacturing Day** connects manufacturers with schools and colleges in their communities. It opens students' eyes and gives them an opportunity to experience practical, hands-on learning and allows manufacturers give back to their communities while helping grow the next generation of manufacturers. One example of this is AME member company, **Newport News Shipbuilding**, and its partnership with **Hampton Roads Public Schools** in Virginia.

This successful program was endorsed by Virginia Governor **Terence R. McAuliffe** who issued a proclamation in support of coupling the AME Adopt-a-School program with Manufacturing Day. **Williamsburg-James City County Public Schools** (Virginia) was the first school district to deploy the program. The program enjoys the bipartisan support of Virginia's Delegates **Monty Mason** and **Brenda Pogge** and Senators **John Miller** and **Tommy Norment.**

Moving forward: Graduating career-ready citizens

Ending the dropout crisis requires an all-hands-on-deck approach.

To ensure the class of 2020 reaches the goal of a **90 percent** graduation rate, the **Civic Marshall Plan Leadership Council** established a phased approach with clear goals focusing on using evidenced-based strategies to address the dropout crisis.

One of the **keys** to America's **greatness** is its ability to **make things**.

As outlined in *Manufacturing: A Blueprint for America's Future,* manufacturing brought our nation to unprecedented levels of prosperity. It carried us to victory in World War II and took our astronauts safely to the moon and back.

By working together, embracing, educational and economic strengths and tackling challenges in a strategic manner as outlined in **Building** a **Nation** of **Makers**, a study grounded in history, we can help rebuild the **American Dream**.

Together, We Can Do It!

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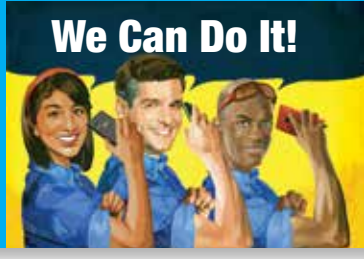

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1942

2014

Skills Gap **Then** and **now!**

Between 1940 and **1945**,
American women entered the workforce in unprecedented numbers during World War II, as widespread male enlistment left gaping holes in the industrial labor force. By **1945**, nearly **one** out of **four** married women worked outside the home. **Rosie the Riveter**, star of a government campaign aimed at recruiting female workers for the munitions industry, became perhaps the most iconic image of working women during the war. In movies, newspapers, posters, photographs and articles, the Rosie the Riveter campaign stressed the patriotic need for women to enter the workforce. **Rosie the Riveter**, was created in 1942 and featured on a poster for the Westinghouse power company under the headline "**We Can Do It!**" and the name went down in history.

Over the **next decade**
nearly **3.5 million** manufacturing jobs likely need to be filled. The **skills gap** is expected to result in **2 million** of those **jobs going unfilled**. The impact is significant. With CEOs and manufacturing executives around the world identifying talent-driven innovation as the number one determinant of competitiveness, it stands to reason the implications of such a shortage are significant and can have a material impact on manufacturers' growth and profitability.

The renewed **2014** "**We Can Do It!**" campaign was created using the same headline used for the 1942 Rosie the Riverter campaign. The difference is we feature **the three amigos** who represent the youth of America. They are the solution for filling our existing and growing skills gap in our manufacturing workforce and the solution for rebuilding the **American Dream**.

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