"The research shows that 84 percent of manufacturing executives agree there is a talent shortage in U.S. manufacturing.

"Our research estimates that the cumulative skills gap - or the positions that likely won't be filled due to a lack of skilled workers - will grow to 2 million between 2015 and 2025."

Manufacturing executives responding to the skills gap survey indicated that 6 of every 10 skilled production openings they have are unfilled today due to the talent shortage.

This gap will be exacerbated by more than 2.7 million professionals exiting the manufacturing workforce through retirement over the next ten years.
Global Competitiveness Summit
“Make It”

Why are we unable to fill the careers in Manufacturing?

STEM Education.

We face a shortage of workers and students proficient in math and science. Compared to their global peers, U.S. students recently finished...

[Diagram showing ranking of countries in math and science]
Global Competitiveness Summit
“Make It”

Why are we unable to fill the careers in Manufacturing?

STEM Education.

69% of high school graduates are not ready for college-level science.

Women make up 48% of the workforce but only 24% of the STEM jobs.

Solutions.....?
Nearly all surveyed executives (94 percent) agree that **internal employee training and development programs** are the most effective skilled production worker development strategies.

They also cite **involvement with local schools and community colleges** (72 percent), **external training and certification programs** (64 percent).

In other words, the solution requires new levels of collaboration whereby all sides are **intrinsically and financially committed** to the outcome.

One example of this is well known but unfortunately, far too small......
Apprenticeship Programs

Full Time Employee + Full Time Student $\rightarrow$ Career Awaits Them upon Graduation

Win for Industry + Win for the Community Colleges + Win for Government

and.... most importantly, all sides have „skin“ in the game.

$\rightarrow$ Reliable pipeline for highly skilled labor
$\rightarrow$ Curriculum by design meets each business‘s specific requirements
$\rightarrow$ Costs and benefits are shared by all
So why aren’t there more Apprenticeship Programs in the USA?

Over the past decades, most apprentice programs were eliminated due to cost pressures, especially during an economic downturn.

When an Apprentice Program is Eliminated, creates a Lose-Lose-Lose:

→ Government: Unemployment payments instead of workforce training
→ Technical Colleges: loss of full time students and direct link to industry
→ Industry: lack of high skilled resources when the economy rebounds

Goal: Develop a sustainable model to drive widespread introduction of apprenticeship programs which by design will withstand periods of economic weakness.
Possible Solutions:

1. Tax Incentives: tax incentives for apprentice wages which are designed to increase during regional periods of increased unemployment.

2. Grants: Increase of grants to cover a higher percentage of initial apprentice program start-up costs but also linked to sustained performance of the apprenticeship program. Grants also for expansion of programs.

3. Direct Link to Highschools: Introduce a formal „Bridge“ program between highschools and Technical/Community colleges (Grades 11-12) including:
   - Course credits towards both highschool graduation and technical college
     Example: „Project Lead the Way“ (Mechatronics)
   - Including job fairs with area apprenticeship programs
The Next 20 Years....

Manufacturing will re-invent itself over and over to ensure the most efficient delivery of products to all of us. Only those regions who adapt will benefit from this key economic driver.

The trend towards re-shoring will continue so long as our overall „package“ is globally competitive:
- Governmental Leadership: Taxes, Regulation, Infrastructure
- Education: Abundant High Skilled and Semi-skilled Workforce
- Cost Drivers: Labor, Land, Logistics, Energy

**Summary:** STEM education is the ultimate driver for the high skilled workforce needed to sustain and grow our manufacturing sector. In parallel to the running improvements in primary and secondary STEM education, apprentice programs can deliver a sustained, high skilled workforce – if we support them.

It is imperative that we ignore the silos that entrap us and together find solutions.
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Partnering with Local High Schools through the FIRST Robotics Program – Myrtle Beach, SC
February 28, 2015 – 1st Place!

Future Apprentices, Engineers...?